

# **A Resource-Based Perspective of Project Success in Public Sector Projects in Abu Dhabi**

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## **Abstract**

Because of the conceptual level rather than the process or practices, many projects might have not been able to achieve their objectives and desired results. Therefore, project management research could be supported by strategic management theory and literature especially the Resource Based View (RBV). Furthermore, intangible resources that are made and organised during project realization are the factor on which differential performance of projects is dependent. In response to this need, this study aimed to understand the nature of the relationship between intangible resources and project success in public sector organizations by introducing a theoretical model that is applying the RBV theory application in Project Management. This model links and displays the influences of 'intangible resource factors' in one coherent model, introduces a theoretical model that can be challenged or considered by further research as a starting point in a research context, and supports project practitioners and project teams while working in the public sector. The objectives of the study are to identify key intangible resources that affect project success, identify how social, human, relational and organizational forms of intangible resource capital affect project success, and develop and validate a conceptual model that incorporates intangible resources and project success. To guide the entire study, a research question was defined as how intangible resource factors influence project outcomes.

This study has an exploratory focus as it seeks to find how intangible resources influence project success. Such a focus favours the use of a qualitative research design and the case study approach was particularly appropriate as it encompasses the holistic, in-depth study of a phenomenon using a variety of data sources and procedures. Ten cases were selected for study and allowed the emergence and interplay of various factors. While the ten project cases were the primary focus of the study, the units of analysis were the capital projects in the utility sector in Abu Dhabi. Four of the cases were used to drive the theory, and six cases were used to validate it. Two data collection techniques were employed: documentary data analyses and interviews. A total of 30 semi-structured interviews were conducted with project team members, carefully selected on the basis of their critical roles as project managers. Two data analysis techniques were employed: within-case analysis and cross-case analysis.

A key finding of this study is that the results set out from the concept where it is not essential for project leaders to have in-depth technical skills and knowledge since the usage of team members that are subject matter experts regularly can be an actual technique to source the

mandatory capability. These study findings provide a review of the conventional wisdom of the past 40 to 50 years which can help top managers and practitioners to re-evaluate their activities. Another finding is the motivation misalignment that increases the generalizability of a previous study results to project management in the research context. The control and monitoring strategy findings in this study were also the subject of a previous study conducted to measure improvements of project outcomes. This study finding brings findings from other cases from the public sector and helped to answer how and why questions. Evidence from this study also found that relationship quality has a significantly positive influence on joint problem solving. The results given from this study have some theoretical implications as well as practical applications, as they give a clear pattern with regard to the effect of planning on creative problem-solving.

## Table of Contents

Chapter 1: Introduction.....	15
1.1 Rationale for the Study .....	15
1.2 Context and Dimension of Global Growth .....	16
1.3 Literature Gaps and Project Contribution .....	21
1.4 Thesis Aim and Objectives .....	22
1.5 Thesis Research Questions.....	22
1.6 Thesis Research Methodology .....	23
1.7 Thesis Structure.....	23
1.8 Summary .....	27
Chapter 2: Research Setting.....	28
2.1 Research Setting Overview .....	28
2.2 Abu Dhabi 2030 Vision and Strategic Context Highlights .....	29
2.3 ADSSC Strategic Plan and Projects Selection Process .....	33
Chapter 3: Literature Review .....	37
3.1 Introduction .....	37
3.2 Challenges and Opportunities of Project Management Research.....	38
3.2.1 Project Management Challenges and Opportunities.....	39
3.3 Resource-Based View (RBV) .....	42
3.3.1 Previous Work of PM using the RBV .....	45
3.4 Intangible Resources (IR) .....	49
3.4.1 Human Capital.....	51
3.4.2 Organizational Capital .....	55
3.4.3 Relational Capital .....	64
3.4.4 Social Capital .....	65
3.5 Project Success.....	70
3.6 Conclusion.....	76
Chapter 4: Research Methodology .....	78
4.1 Introduction .....	78
4.2 Research Philosophy and Paradigm .....	79
4.3 Quantitative and qualitative research paradigms .....	82
4.4 Why Qualitative Research? Justification.....	84
4.5 Research Design and Case Study Approach .....	85
4.6 The Case Study Protocol .....	89

4.6.1 Determine and Define the Research Questions (Step 1) .....	89
4.6.2 Obtaining Access (Step 2).....	90
4.6.3 Select Cases (Step 3) .....	92
4.6.4 Collect Data in the Field (Step 4).....	95
4.6.5 Evaluate and Analyse the Data (Step 5) .....	103
4.6.6 Preparing the Report (Step 6) .....	107
4.7 Research Validity, Creditability and Quality.....	107
4.7.1 Creswell's approach for qualitative research's validity.....	108
4.7.2 Reliability in qualitative research .....	109
4.7.3 Generalisation in qualitative research .....	109
4.7.4 Dependability in qualitative research .....	110
4.7.5 Confirmability in qualitative research.....	110
4.7.6 Yin's case study test applied in the research .....	110
4.7.8 Biases in the qualitative research .....	111
4.8 Summary of Steps and Techniques for Building the Theoretical Framework from Case Study .....	112
4.9 Research Method Implication.....	115
4.9.1 Case Selections.....	115
4.9.2 Data Collection .....	116
4.9.3 Data Analysis .....	118
4.10 Ethical Considerations.....	119
4.11 Conclusion.....	120
Chapter 5: Research Description.....	121
5.1 Introduction .....	121
5.2 Case Study 1 (Project 1755) .....	122
5.2.1 Project Overview .....	123
5.2.2 Findings and Discussion .....	126
5.2.3 Conclusion .....	133
5.3 Case Study 2 (Project 1149) .....	134
5.3.1 Project Overview .....	135
5.3.2 Findings and Discussion .....	137
5.3.3 Conclusion .....	149
5.4 Case Study 3 (Project 1185) .....	150
5.4.1 Project Overview .....	151

5.4.2 Findings and Discussion .....	153
5.4.3 Conclusion .....	173
5.5 Case Study 4 (Project O-1484) .....	175
5.5.1 Project Overview .....	176
5.5.2 Findings and Discussion .....	180
5.5.3 Conclusion .....	188
Chapter 6: Cross-Case Analysis .....	190
6.1 Introduction .....	190
6.2 Human Capital Finding and Discussion – Study Objective 2 / Research Question 1 .....	191
6.2.1 Leadership Industry Specific Skill (Theme 1) .....	192
6.2.2 Leadership National Culture (Theme 10) .....	196
6.2.3 Team Familiarity (Theme 2), Individual Experience (Theme 3), and Organization Experience (Theme 4) .....	201
6.2.4 Implementation Intention (Theme 9) .....	206
6.3 Organization Capital Finding and Discussion – Study Objective 2 / Research Question 2 .....	209
6.3.1 Motivation Misalignment (Theme 6) .....	209
6.3.2 Monitoring and Control Strategy (Theme 11) .....	212
6.3.3 Top Management Support (Theme 6) .....	214
6.4 Relationship Capital Finding and Discussion – Study Objective 2 / Research Question 3 .....	218
6.4.1 Joint problem solving (Theme 8) .....	218
6.5 Social Capital Finding and Discussion – Study Objective 2 / Research Question 4 .....	223
6.5.1 Knowledge Sharing (Theme 7) .....	224
6.6 Conclusion .....	229
Chapter 7: Confirmatory Case Studies .....	232
7.1 Introduction .....	232
7.2 Case Study 5 (Project O-10525) .....	233
7.2.1 Project Overview .....	234
7.2.2 Finding and discussion .....	236
7.2.3 Summary of Findings for the Case .....	247
7.3 Case Study 6 (Project O-1692) .....	247
7.3.1 Project Overview .....	248
7.3.2 Finding and discussion .....	252
7.3.3 Summary of Findings for the Case .....	267

7.4 Case Study 7 (Project O-1086B) .....	268
7.4.1 Project Overview .....	269
7.4.2 Findings and Discussion .....	273
7.4.3 Summary of Findings for the Case .....	289
7.5 Case Study 8 (Project O-1434) .....	290
7.5.1 Project Overview .....	291
7.5.2 Finding and discussion .....	294
7.5.3 Summary of Findings for the Case .....	302
7.6 Case Study 9 (Project O-1463) .....	303
7.6.1 Project Overview .....	304
7.6.2 Findings and Discussion .....	308
7.6.3 Summary of Findings for the Case .....	318
7.7 Case Study 10 (Project O-1673) .....	319
7.7.1 Project Overview .....	320
7.7.2 Findings and Discussion .....	323
7.7.3 Summary of Findings for the Case .....	331
7.8 Conclusion .....	332
Chapter 8: Theoretical Framework and Conclusion.....	339
8.1 Introduction .....	339
8.2 Framing the Findings.....	339
8.3 Model Implications.....	342
8.4 Contribution .....	350
Chapter 9: Research Reflection.....	357
9.1 Introduction .....	357
9.2 Research Process and Study Limitations.....	358
9.3 Future Research .....	364
9.4 Personal Development as a Researcher.....	366
References.....	368
Appendix 1: List of potential cases gathered for selection process.....	399
Appendix 2: Case Interview Transcripts Summaries.....	404
Case 1: Summary of Interviews Transcripts of Case 1 (Project O-1175).....	404
Case 2: Summary of Interviews Transcripts of Case 2 (Project O-1149).....	409
Case 3: Summary of Interviews Transcripts of Case 3 (Project O-1185).....	415
Case 4: Summary of Interviews Transcripts of Case 4 (Project O-1484).....	421



Case 5: Summary of Interviews Transcripts of Case 1 (Project O-10525).....	425
Case 6: Summary of Interviews Transcripts of Case 6 (Project O-1692).....	427
Case 7: Summary of Interviews Transcripts of Case 7 (Project 1086B) .....	433
Case 8: Summary of Interviews Transcripts of Case 8 (Project O-1434).....	438
Case 9: Summary of Interviews Transcripts of Case 9 (Project O-1463).....	443
Case 10: Summary of Interviews Transcripts of Case 10 (Project O-1692).....	449

## List of Tables

Table 2.1	Case Studies and Selection Process.....	34	X
Table 4.1	Characteristics of interpretivist research.....	82	
Table 4.2	Assumptions behind quantitative and qualitative paradigms.....	83	
Table 4.3	Typology of case studies.....	88	
Table 4.4	Sample Techniques .....	93	
Table 4.5	Summary of the Case Selection Criteria.....	95	
Table 4.6	Qualitative and quantitative data sources for case study research.....	96	
Table 4.7	Interview Semi-structured Open-ended Questions.....	102	
Table 4.8	Yin's case study tests.....	111	
Table 4.9	Steps and techniques for building the theoretical framework from case study.....	113	
Table 4.10	Study Plan.....	118	
Table 5.1	Chapter 5 Case Studies.....	122	
Table 5.2	Case General Information (Project 1755) .....	123	
Table 5.3	Final Coding for Leadership Industry-Specific Experience.....	127	
Table 5.4	Case General Information (Project 1149) .....	135	
Table 5.5	Final Coding for Team Familiarity.....	138	
Table 5.6	Final Coding for Individual Experience.....	142	
Table 5.7	Final Coding for Organization Experience.....	144	
Table 5.8	Final Coding for Motivation Misalignment.....	148	
Table 5.9	Case General Information (Project 1185) .....	151	
Table 5.10	Final Coding for Team Familiarity.....	154	
Table 5.11	Final Coding for Individual Experience.....	157	
Table 5.12	Final Coding for Organization Experience.....	160	
Table 5.13	Final Coding for Motivation Misalignment.....	163	
Table 5.14	Final Coding for Top Management Support.....	166	
Table 5.15.	Final Coding for Knowledge Sharing.....	170	
Table 5.16	Case General Information (Project O-1484) .....	175	
Table 5.17	Final Coding for Top Management Support.....	181	
Table 5.18	Final Coding for Joint Problem Solving.....	185	
Table 6.1	Summary of the emerging main themes.....	191	

Table 6.2	Statement supporting the importance of Leadership Industry-Specific Skill.....	196
Table 6.3	Statement supporting the importance of Leadership National Culture.....	201
Table 6.4	Statement supporting the importance of Themes 2, 3 and 4.....	206
Table 6.5	Statement supporting the importance of Implementation Intention.....	209
Table 6.6	Statement supporting the importance of Motivation Misalignment.....	212
Table 6.7	Statement supporting the importance of Monitoring and Control Strategy.....	214
Table 6.8	VIOR Barney's Table.....	217
Table 6.9	Statement supporting the importance of Top Management Support.....	218
Table 6.10	Statement supporting the importance of Joint Problem Solving.....	223
Table 6.11	Statement supporting the importance of Knowledge Sharing.....	229
Table 7.1	Chapter 7 Case Studies.....	233
Table 7.2	Case General Information (Project O-10525) .....	234
Table 7.3	Final Coding for Individual Experience.....	237
Table 7.4	Statement supporting the importance of Individual Experience.....	239
Table 7.5	Final Coding for Organization Experience.....	240
Table 7.6	Statement supporting the importance of Theme 4.....	243
Table 7.7	Final Coding for Top Management Support.....	244
Table 7.8	Statement supporting the importance of Top Management Support.....	246
Table 7.9	Case General Information (Project O-1692) .....	248
Table 7.10	Final Coding for Leadership Industry-Specific Experience.....	253
Table 7.11	Statement supporting the importance of Leadership Industry-Specific Skills.....	256
Table 7.12	Final Coding for Implementation Intention.....	256
Table 7.13	Statements supporting the importance of Implementation Intention.....	258
Table 7.14	Final Coding for Top Management Support.....	259
Table 7.15	Statement supporting the importance of Top Management Support.....	262
Table 7.16	Final Coding for Joint Problem Solving.....	263
Table 7.17	Statement supporting the importance of Joint Problem Solving.....	267
Table 7.18	Case General Information (Project O-1086B) .....	274
Table 7.19	Final Coding for Individual Experience.....	277
Table 7.20	Statement supporting the importance of Individual Experience.....	277
Table 7.21	Final Coding for Top Management Support.....	278
Table 7.22	Statement supporting the importance of Top Management Support.....	282

Table 7.23	Final Coding for Monitoring and Control Strategy.....	283
Table 7.24	Statement supporting the importance of Monitoring and Control Strategy.....	284
Table 7.25	Final Coding for Joint Problem Solving.....	285
Table 7.26	Statement supporting the importance of Joint Problem Solving.....	289
Table 7.27	Case General Information (Project O-1434) .....	291
Table 7.28	Final Coding for Team Familiarity.....	295
Table 7.29	Statement supporting the importance of Theme 2.....	298
Table 7.30	Final Coding for Organization Experience.....	299
Table 7.31	Statement supporting the importance of Theme 4.....	302
Table 7.32	Case General Information (Project O-1463) .....	304
Table 7.33	Final Coding for Implementation Intention.....	309
Table 7.34	Statements supporting the importance of Implementation intention.....	311
Table 7.35	Final Coding for Motivation Misalignment.....	312
Table 7.36	Statement supporting the importance of Motivation Misalignment.....	314
Table 7.37	Final Coding for Knowledge Sharing.....	315
Table 7.38	Statement supporting the importance of Knowledge Sharing.....	318
Table 7.39	Case General Information (Project O-1673) .....	320
Table 7.40	Final Coding for Motivation Misalignment.....	324
Table 7.41	Statement supporting the importance of Motivation Misalignment.....	326
Table 7.42	Final Coding for Knowledge Sharing.....	327
Table 7.43	Statement supporting the importance of Knowledge Sharing.....	331
Table 7.44	Compiled List of Statements supporting the Themes.....	334

## List of Figures

Figure 1.1	From Survival to Quality of Life.....	18	X
Figure 1.2	Global Spending reaching US\$9 trillion in 2025.....	19	
Figure 1.3	Emerging Countries vs. Developed Nations spending in Infrastructure Project .....	20	
Figure 1.4	Key Infrastructure Sectors.....	20	
Figure 1.5	Thesis Structure.....	26	
Figure 2.1	The Setting Business Activities .....	28	
Figure 2.2	Projected Electricity Demand for Abu Dhabi.....	30	
Figure 2.3	Projected Water Demand for Abu Dhabi.....	30	
Figure 2.4	STEP alignment and major components.....	31	
Figure 2.5	STEP design allows gravity to take its natural course.....	32	
Figure 2.6	Waste Water Treatment Network Coverage in Abu Dhabi vs Other Countries.....	32	
Figure 3.1	Resource Classification.....	28	
Figure 3.2	Power Distance Index Comparison.....	62	
Figure 3.2	Project Success Dimensions.....	74	
Figure 3.3	Project Cost Index.....	74	
Figure 3.4	Project Time Index.....	75	
Figure 3.5	Project Quality.....	75	
Figure 5.5	Case 4 Framework.....	189	
Figure 6.1	Cross-Case Framework. ....	231	
Figure 8.1	Theoretical Framework Developing Process.....	341	

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## **Chapter 1: Introduction**

### **1.1 Rationale for the Study**

One of the most important drivers of infrastructure development is project success (Zhang 2005), which will ensure success for the billions of dollars of capital available for investment. Therefore, adequate project execution is a prime business objective requiring coordinated effort between academic theory and practice. For public sector organizations, executing projects successfully is a critical factor because such bodies deploy significant resources on projects, such as infrastructure, which may be larger than for projects by private sector organizations (Crawford and Helm, 2009). However, project management is a discipline that is still developing. Comparing to traditional academic disciplines of management such as marketing, finance, and operations, project management still may not have a clear picture of whether it is even recognized and accepted as a separate discipline (Almarri and Gardiner, 2014a). The main reason for this is that project management research maybe lacking a strong theoretical base and guiding concepts (Killen et al. 2012). There is a need for additional developments of the theory as well as practice.

Due to the conceptual level rather than the process or practices, many projects might have not been able to achieve their objectives and desired results. There is a need to bring a new understanding on what project management is truly about and how conceptual levels can be further developed and improved. Such understanding will also develop other tools and practices that will affect education and practice in the discipline that will lead to more successful project accomplishments (Gido and Clements, 2014). Project management research can be supported by strategic management theory and literature, especially the resource-based view (RBV) (Almarri and Gardiner, 2014a). This concept (RBV) contributes to project management success as well as the success of the overall organization. However, RBV has been criticized because of the intention for generalization (Almarri and Gardiner, 2014a). Researchers should consider different areas of RBV improvements in order to diminish the criticisms that are directed towards this application. Diminishing the criticisms of RBV can be done by using valid operationalization of constructs that will improve RBV application in project management research (Almarri and Gardiner, 2014a). In -depth interviews and case study methodologies for data collection of the future studies may help to utilize RBV in research and practice. The collected data can be further analyzed and used for reinforcements of the credibility and validity of the findings that will lead to better conceptual frameworks and

practices for competitive advantage. This will lead to knowledge improvements in the field of study by which education and training programmes will be advanced and eventually enhance projects success. Such development of theories and new models can illuminate the complexity of projects at all levels. Moreover, these developed theories can be used to improve the awareness of all project participants and to mitigate risks that may exist. This can greatly help to advance knowledge since studies confirming suggestions made by existing theories can improve understanding of the relative importance of project factors. For example, the development of new models allows us to address the complexity of the resource profile of a project. The emergent models can be considered starting points for researchers to facilitate the exploration of resources possessed by a project. This can enhance accuracy when measuring project factors and can provide better understanding of the role each factor plays. Therefore, there is a strong need for in-depth examination of the project management field. This need is even greater in project-based public sector departments, as they are typical knowledge-based organizations, and resources play a significant role in project success (Carmeli and Tishler, 2004). In response to this need, the researcher conducted this study to contribute to academia and practice and the following section explains the context and dimension of the study that was carried out that can also contribute to Abu Dhabi 2030.

## **1.2 Context and Dimension of Global Growth**

Abu Dhabi has developed the 2030 vision that includes diversification and economic growth. Different activities have already been framed. The Abu Dhabi Urban Planning Council (ADUPC) has developed the “Plan Abu Dhabi 2030” (ADUPC 2007). This is a comprehensive visionary plan for the city of Abu Dhabi. This urban structure framework plan is grounded in the cultural and environmental identity of Abu Dhabi. By the year 2030, the population of the city may grow to three to five million. This situation will certainly have important implications as well as assert more pressures on existing infrastructure and institutions. At the same time, it is clear that even though the plan covers most aspects of urban planning, it still lacks attention to the water, sewerage lines, and energy required to meet the comprehensive development plan. This could have serious consequences since Abu Dhabi’s utilities demand and supply to meet water desalination, sewerage treatment, and electricity generation is critical to the sustainable development of the city. Therefore, it should be dealt with very carefully as it could be the tipping point between success and failure of the plan.

To be viewed as a modern city in its most sophisticated and comprehensive form (see Figure 1.1), Abu Dhabi is eager to achieve a more sustainable urban environment. It intends to do



this through addressing different themes, such as the development of its infrastructure, community identification and social cohesion, as well as the quality of the public realm. Developing appropriate infrastructure is critical for achieving the other two themes and forms a major priority area (Munnell and Cook, 1990). However, it is important not only to look at this vision of being a modern city in its most sophisticated and comprehensive form but also to examine the factors that may influence the success. One of the most important drivers of infrastructure development, of course, will be project success (Zhang 2005), which will ensure success for the billions of dollars of capital available for investment. Project success is important for the creation of first -class cities, meaning that executing projects successfully is a critical factor. Therefore, adequate project execution is a prime business objective which requires coordinated effort between academic theory and practice. Urban planning and project decisions must therefore be complementary and share the same overall vision. Thus, the main drivers for the researcher of this paper is to contribute to the Abu Dhabi 2030 strategy success, while at the same time providing personal learning benefits. The researcher recognizes the strong need for an in-depth examination of the project management field in project-based public sector departments in order to create a vibrant, sustainable, and attractive city. Furthermore, the researcher has identified the study of project success in the public sector is crucial to the evolution of Abu Dhabi because of the frequent cost and time overruns in large public investments projects. For example, the 85 project cases obtained from the archived files of the research setting of this study show a low success average rate, as shown in Appendix 1.

**Fig 1.1: From Survival to Quality of Life**

(Adopted from: PwC: Cities of opportunity: Building the future November, 2013)

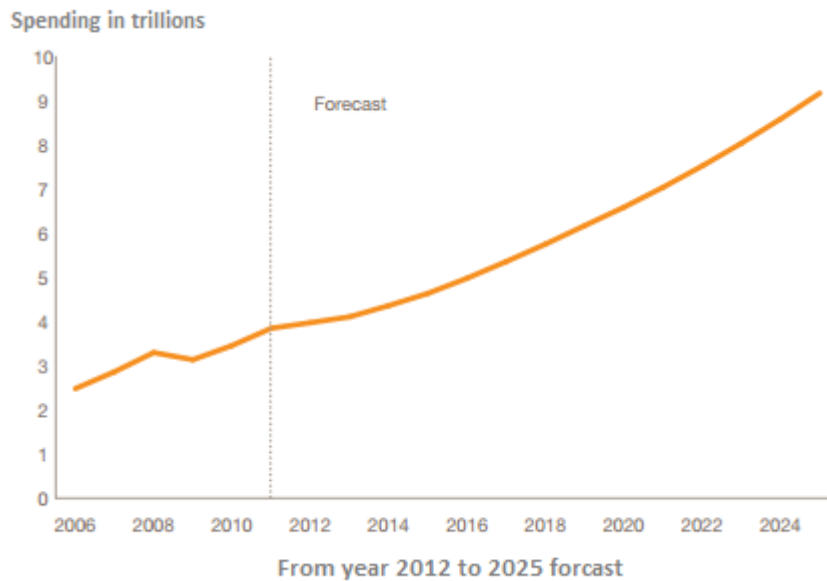


As a response to the frequent overrun of cost and time in large public projects, the researcher has developed a conceptual model linking intangible resources (human, organizational, relational, and social capital) to project success in public sector organizations. The developed framework utilizes established techniques for measuring project success and the Resource-Based View theory. Using a case study approach, qualitative data were collected from project team members in a large public sector organization in Abu Dhabi, and archived data were also used. The foci of analysis of this study are capital projects in the utility sector in Abu Dhabi.

Based on marketing intelligence, the need for this study is even greater. This is because worldwide spending on infrastructures and capital projects has started to recover from the 2008 global financial crisis and is expected to rise significantly over the coming ten years. In 2012, spending increased to US\$4 trillion per year and is expected to grow to more than \$9 trillion per year by 2025 (see Figure 1.2). The annual growth rate has risen from less than 1% in recent years to 6% in 2014; furthermore, it is expected to reach 7.5% by 2016 and, as the economic recovery levels off later in the decade, the pace of annual growth is likely to ease. Over the next decade, the spending forecasts reflect a major global change with this paradigm shift worldwide leading to great impact on infrastructure development.

**Fig 1.2: Global Spending reaching US\$9 trillion in 2025**

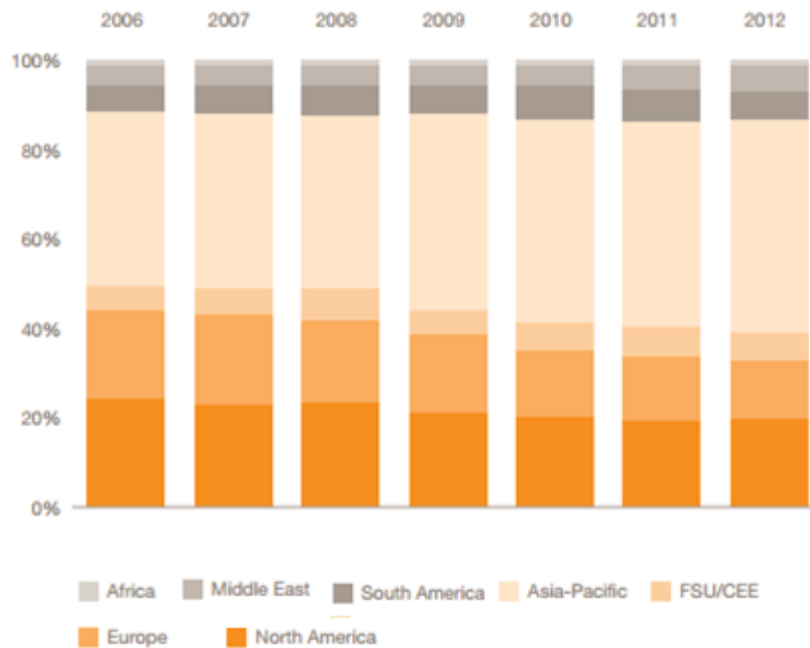
(Adopted from: Oxford Economics)



Capital and infrastructure spending is already reflecting a considerable geographical shift to the East from the West. Over the next decade, the Oxford Economics global analysis shows that spending on capital projects and infrastructure is expected to accelerate significantly in the fast-growing emerging economies. The impact of the West's financial crisis in 2008 accelerated this shift, even though emerging countries were spending more on infrastructure than developed nations before the financial crisis (Naudé, 2009) (see Figure 1.3). For example, more than US\$100 billion will be spent in Abu Dhabi alone on ambitious plans for growth by 2020. To date, Abu Dhabi has made a financial injection of US\$90 billion to help fund major capital development projects taking place in the Emirate between 2013 and 2017. This injection into projects is aimed at providing necessary services for the citizens and supporting the overall economic development in the Emirate.

**Fig 1.3: Emerging Countries vs Developed Nations spending in Infrastructure Projects**

(Adopted from: Oxford Economics)



The World Economic Forum estimates an economic return of 5% to 25% on capital projects in the five key infrastructure sectors (see Figure 1.4). This basic infrastructure spending includes both individual and social needs from hospitals, and sanitation, to power transmission, schools, and rudimentary transport; therefore, the more spending on these sectors, the more modern the city becomes. The following section discusses the literature gaps and the contribution in response to the needs of project management field highlighted in section 1.1.

**Fig 1.4 Key Infrastructure Sectors**

(Adopted from: Oxford Economics)



### **1.3 Literature Gaps and Project Contribution**

As discussed thoroughly in the literature review chapter, project management is a discipline that is still developing comparing to other traditional academic disciplines. Project management still does not have a clear picture, even if it is recognized and accepted as a separate discipline. The main reason for this is that project management research is lacking a strong theoretical base and guiding concepts. Therefore, there is a need for additional developments of the theory as well as to practice. Because of the conceptual level rather than because of the process or practices, many projects might have not been able to achieve their objectives and desired results. There is a need to bring a new understanding of what project management is truly about and how conceptual levels can be further developed and improved. Such understanding will also develop other tools and practices that will affect education and practice in the discipline that will lead to more successful project accomplishments.

The research outcomes of this research are anticipated to make two specific contributions. The first contribution is to introduce a theoretical model that is applying the RBV theory application in PM. This model contributes in closing the gaps related to project management research lacking a strong theoretical base and guiding concepts. It can help to advance the knowledge since such a study confirming suggestions made by an existing theory can improve understanding of the relative importance of project factors. The developed model can be considered as a starting point for researchers to facilitate the exploration of resources possessed by a project, which will enhance accuracy when measuring project factors and provide better understanding of the role each factor plays. The second contribution is to support project management research by utilizing a strategic management theory such as the RBV. Even though the concept of the RBV has been criticized because of the intention for generalization, this research has considered different areas of RBV improvements in order to diminish the criticisms that are directed towards this application. Diminishing the criticisms of RBV has been done by using valid operationalization of constructs that can improve RBV application in project management research. In-depth interviews and case study methodologies for data collection of future studies can help to utilize RBV in research and practice. The collected data could be further analyzed and used for reinforcements of the credibility and validity of the findings that will lead to better conceptual frameworks and practices for competitive advantage. This will lead to knowledge improvements in the field of study by which education and training programmes will be advanced and eventually enhance projects success. Therefore, to contribute uniquely to the outlined gaps in the project

management literature and to make these two specific contributions, the aim and objectives in the following section have been defined.

### **1.4 Thesis Aim and Objectives**

This study aimed to understand the nature of the relationship between intangible resources and project success in public sector organizations. This is achieved by introducing a theoretical model that is applying the RBV theory application in Project Management. The developed model links and displays the influences of 'intangible resource factors' in one coherent model, introduces a theoretical model that can be challenged or considered by further research as a starting point in a research context, and supports project practitioners and project teams while working in the public sector. In order to achieve this aim, the following objectives have been defined:

**Objective 1:** To identify key intangible resources that affect project success, drawing on the resource-based view.

**Objective 2:** To identify how social, human, relational and organizational forms of intangible resource capital affect project success:

**Objective 3:** To develop and validate a conceptual model that incorporates intangible resources and project success

### **1.5 Thesis Research Questions**

To achieve the above objectives, four research questions have been defined to guide the entire study and to better facilitate analysis, as well as avoid distraction by interesting but irrelevant digressions:

**Research Question 1:** How do human capital intangible resource factors influence project outcomes in a public sector organization in Abu Dhabi?

**Research Question 2:** How do organizational capital intangible resource factors influence project outcomes in a public sector organization in Abu Dhabi?

**Research Question 3:** How do relational capital intangible resource factors influence project outcomes in a public sector organization in Abu Dhabi?

**Research Question 4:** How do social capital intangible resource factors influence project outcomes in a public sector organization in Abu Dhabi?

To find answers to the four research questions, in- depth interviews and case study methodologies for data collection were utilized. The following section justifies the choice of research methodology selection.

## **1.6 Thesis Research Methodology**

Considering the exploratory nature of this study, a qualitative approach was selected as an appropriate approach since it would allow the researcher to gain in-depth information/understanding and explanation of aspects related to the intangible resource factors in the context of PM in a new geographical area such as Abu Dhabi. It was particularly suited to collecting data on project team members' perspectives and experiences, especially when sensitive topics, such as the intangible research factors of the study, are being explored. This is a sensitive topic as it largely contains human, social and relational aspects.

The qualitative approach was useful for this study because interviews assist in elucidating the concept by allowing the gathering of rich information on how project team members view it (Killen et al., 2012). It gave flexibility for participants' interaction in their language and under their own terms (Gul 2012). Qualitative data were of great assistance in exploring problematic RBV concepts, such as in the case of intangible resources (Kraaijenbrink et al. 2010; Molloy et al. 2011). Further advantages from using the qualitative approach included every small piece of evidence, remarks or statements in formal and informal settings being regarded as data that were used to find explanation for the research questions. The exploratory nature of this study and the adopted qualitative techniques were linked to inductive reasoning. The study made broad generalizations from specific observations by discerning patterns, making generalizations, and inferring explanations. It focused on participation, exploration, learning and demonstration in underlying social processes (Baumann 2013). Therefore, the qualitative research method helped to collect data to be further analyzed and used for reinforcements of the credibility and validity of the findings that will lead to better conceptual frameworks and practices for competitive advantage. The following section presents the thesis structure.

## **1.7 Thesis Structure**

This study is divided into nine chapters. It starts by introducing the underlying concepts of this thesis before describing the research design and methodology and research setting, prior to analysis and discussion of results in order to develop and discuss the fulfilment of the research objectives. Figure 1.5 presents the structure of the thesis and the relationship of the nine chapters in a graphical layout.

**Chapter 1** provides a brief introduction into the underlying concepts of this thesis and introduces the research questions, the research aim, and the research objectives. The

motivation and justification for this research project are explained and an overview of the applied research strategy and methods for data collection is provided.

**Chapter 2** introduces the research setting history and origin, service provided, mission and vision of the company and the organizational structure designed to achieve the company's strategic plan. It also includes a list of projects for the study and the case selection process, as well as justifications for the selected research components.

**Chapter 3** is the literature review chapter, which explains the research context in more detail. This chapter includes the literature review for the selected topic and its related subjects and then summarizes previously published work concerning project management, Resource Based View (RBV), and intangible resources. Additionally, this literature review addresses the areas of project success measurement, project management (PM) in the public sector and gaps in the PM and RBV literature.

**Chapter 4** describes the research design and methodology. There are various options available for conducting empirical research focusing on RBV and project management; therefore, the arguments for following a qualitative or quantitative research trail are discussed in order to understand the selected approach. Additionally, the underlying philosophical, ontological and epistemological considerations are included in the discussion. Moreover, the tactics for a good case study design are manifested throughout this chapter. Issues around the analysis and interpretation of empirical data are also addressed.

**Chapter 5** delivers within-case analysis for the first group of case studies (four cases) that includes data analysis, and discussion of results. The results of each case are explained in separate sections of the chapter. The main findings and their influences on project success are explored as part of the case study analysis.

**Chapter 6** delivers cross-case analysis for the first group of case studies (four cases) that includes data analysis, and discussion of results. It also addresses comparison with conflicting and similar literature to sharpen generalizability, improves construct definition, and raises the theoretical level. The chapter summarizes the findings by introducing preliminary models linking project outcomes to intangible resources.

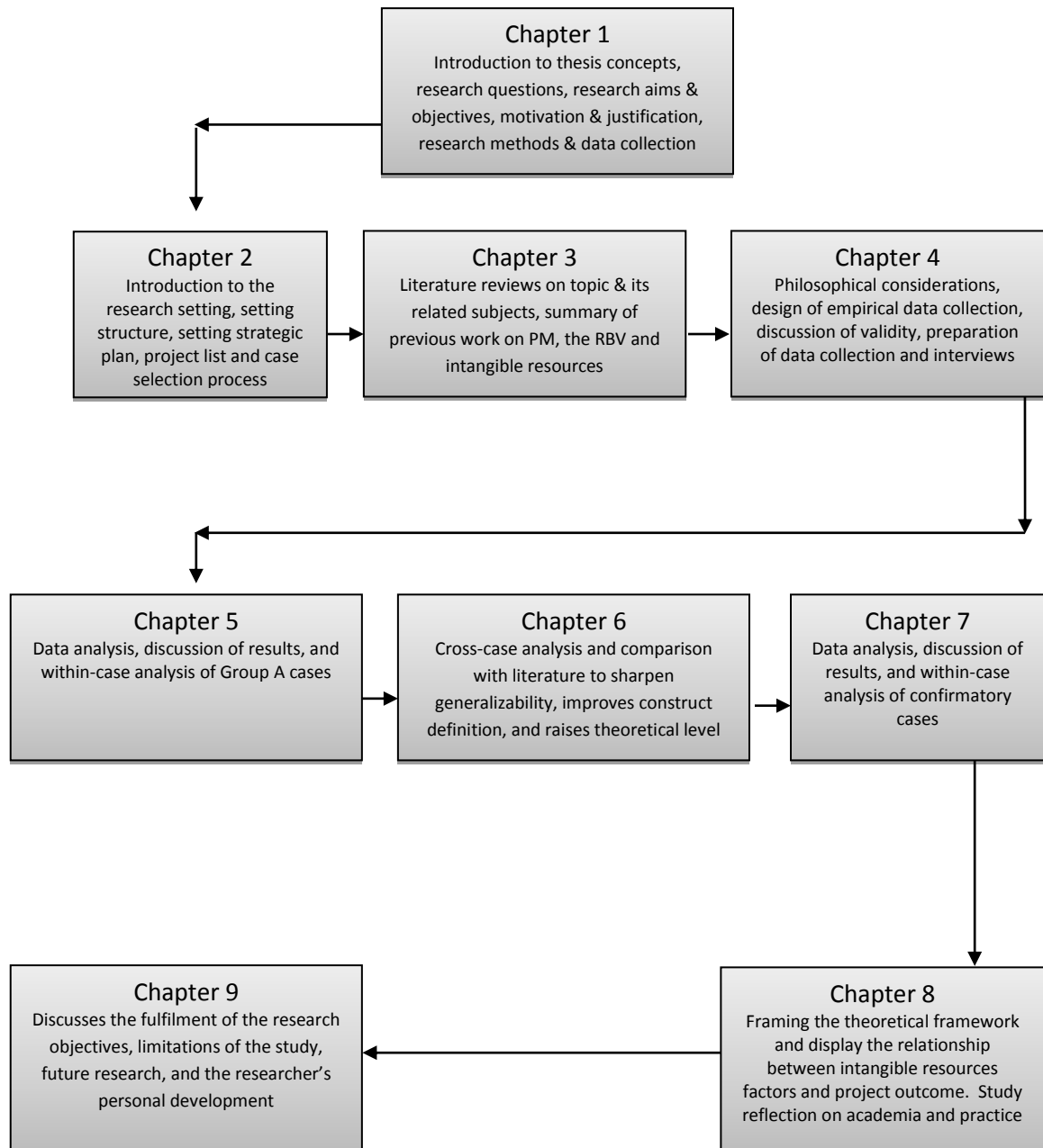


**Chapter 7** delivers within-case analysis that includes data analysis and discussion of results for the confirmatory cases. The results of each case are explained in separate sections of the chapter. The main findings and their influences on project success are explored as part of the case study analysis. The relationships of the influences and other identified influences on project success are summarised for each case.

**Chapter 8** is based on the findings from chapters 6 and 7 and continues with the development of a theoretical framework. The framework is described with its opportunities for project practitioners working in the public sector, as well as its contribution to academia.

**Chapter 9** discusses the fulfilment of the research objectives. The limitations of this thesis are explained. This chapter also highlights areas in which additional research is warranted.

**Fig 1.5: Thesis Structure**



## **1.8 Summary**

This chapter has provided an overview of the concepts related to the research presented herein; it has also explained the motivation and justification for the study of project management in the Abu Dhabi. The research aim of understanding the nature of the relationship between intangible resources and project success in public sector organizations by introducing a framework by which scholars and practitioners can investigate a firm's profile of resources has been described. The chapter describes the objectives of identifying key intangible resources that affect project success, identifying how social, human, relational and organizational forms of capital affect project management success and the development of a the model that incorporates intangible resources and project success. The research questions that guided the entire study addressed by the present research have also been described. A brief review of the research strategy, context, and research contribution of this thesis has also been provided. Chapter 2 explores the setting and provides more details of the case study selection process.

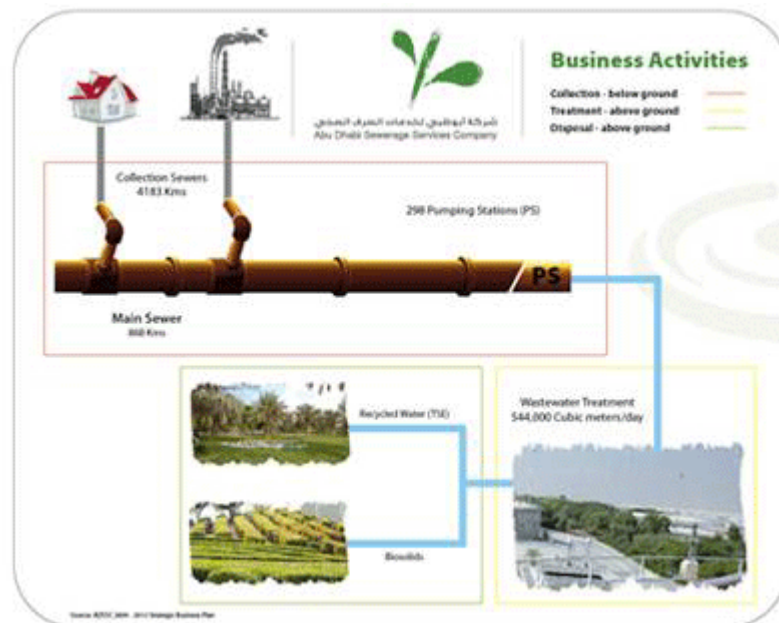
## Chapter 2: Research Setting

### 2.1 Research Setting Overview

Public sector organizations in Abu Dhabi ultimately report to the government. In this research study, the researcher looks at one of the organizations directly responsible for delivery of a specific service to the citizenry. The organization belongs to a bigger group of companies called Abu Dhabi Water and Authority (ADWEA) which reports to the executive branch of the government headed by the Prime Minister. This structure, along with its multiple levels and reporting lines, provides a major challenge to project management implementation and adoption. Additionally, a special purpose company, such as the research setting of this paper, should run similarly to private firms even though it is operated under the direction of a state-appointed board who also ultimately reports to a line minister.

In June 2005, Abu Dhabi Sewerage Services Company (ADSSC) was established. Its main responsibility is the collection and treatment of waste-water discharged from residential and commercial customers in the Emirate of Abu Dhabi and the safe disposal of both the solid and liquid waste.

**Figure 2.1: The Setting Business Activities**



Prior to the establishment of ADSSC, waste water services were managed by the municipalities in Abu Dhabi and Al Ain. At the time of its formation, ADSSC was a part of the Abu Dhabi

Water and Electricity Authority (ADWEA) group of companies. Consequently, a number of policies and services were provided by ADWEA. IT services were outsourced to Injazat Data Systems (INJAZAT), which has a contract with ADWEA. ADSSC policies related to finance, supply and human resources were aligned with ADWEA.

The corporate objectives of ADSSC are to operate and maintain existing infrastructure, ensure availability of reliable services, deliver a large number of infrastructure projects to meet growth demands, safety and environment of the Emirate of Abu Dhabi, partner, engage and collaborate with stakeholders and to develop a skilled workforce.

ADSSC core business processes address three activities: (1) waste water collection, (2) waste water treatment, and (3) waste water disposal. Waste water treatment plants are strategically located in Al Ain, Abu Dhabi and the Western Region. The current infrastructure was designed based upon earlier flow projections and is now severely overloaded. In order to meet current and future requirements, refurbishment, rehabilitation, renewal and construction of the infrastructure is under way. For horticulture purposes, the company provides treated water and bio-solids to the municipalities. To contribute towards environmental preservation, over 60% of the recycled water is used for irrigation. In the near future, 100% of treated waste water produced by ADSSC will be reused upon the completion of treated water delivery pipelines. ADSSC key areas of focus are (1) Sustainability via provision of sustainable sewerage services and (2) Capability via meeting Abu Dhabi's growth plans.

ADSSC contributes effectively to the Emirate of Abu Dhabi's 2030 vision. It is a key link in the overall value-proposition offered to public, private, public and commercial customers. Services offered by ADSSC form an integral part of the utilities value-chain of the government of Abu Dhabi. It endeavours to make sure that its services remain invisible, odourless, safe and environmentally friendly. The mission of the company is to achieve excellence in provision of high quality, cost effective, safe and environmentally sewerage services where the vision is to be recognized by communities, businesses and regulators as a world leader in sewerage services by the year 2030. The next section explains the initiatives.

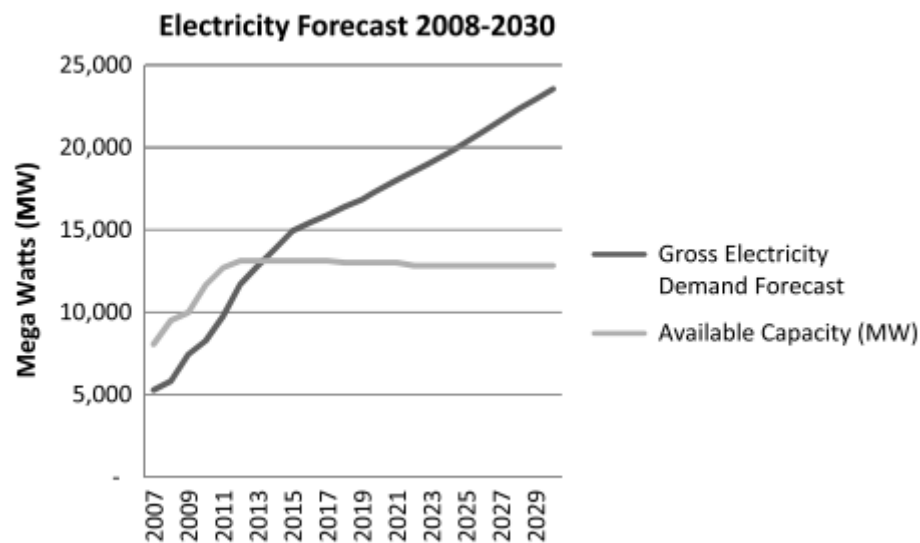
## **2.2 Abu Dhabi 2030 Vision and Strategic Context Highlights**

Abu Dhabi Water and Electricity Company (ADWEC) is the government agency dealing with sewerage, water and electricity needs not only for Abu Dhabi. Based on the Abu Dhabi 2030 plan, ADWEA developed a projection plan for sewerage, water and electricity demand up to the year 2030 (ADWEC 2008). These mandates are to ensure that demands are satisfied. Figs.

2.2 and 2.3 show the projected electricity and water demands, respectively, for the city of Abu Dhabi. As shown in both figures, the tipping point is the year 2013, when the demands were projected to exceed available capacities. Therefore, planning for new power and desalination plants should be ongoing because the mandate of ADWEC is to supply electricity and water at all times.

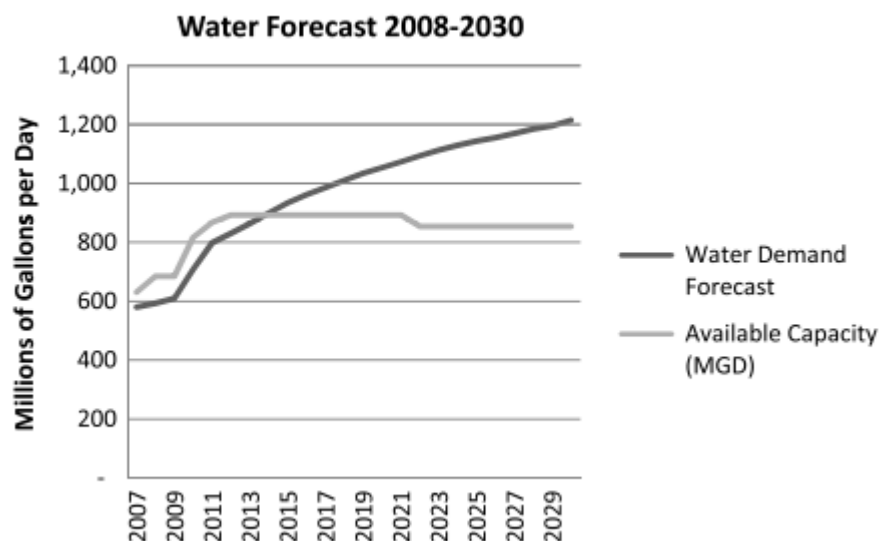
**Figure 2.2: Projected Electricity Demand for Abu Dhabi**

(Data from ADWEC, 2008)



**Figure 2.3: Projected Water Demand for Abu Dhabi**

(Data from ADWEC, 2008)



To meet the sewerage and water treatment demand, the Program Management Department (PMD) in ADSSC was established in June 2008 as part of achieving the Abu Dhabi 2030 vision, and enhancing capability and optimizing program investments by developing a sustainable, environmentally friendly and world-class strategic tunnel sewerage system. The main objective is to effectively manage the delivery of key Capital Investment Programs (CIP), including the 'Strategic Tunnel Enhancement Program' (STEP), by utilizing programs for best management practices and proven tools throughout the delivery phases. ADSSC has developed a proactive strategy to stay one step ahead of Abu Dhabi's growth and associated needs for expansion and improvement of the sewerage system. The key feature of CIP is STEP, which is currently being delivered in parallel with other capital investments. STEP features the following:

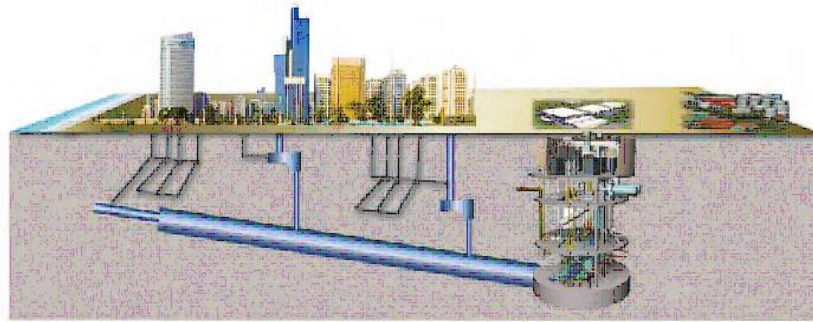
- (1) Deep tunnel sewer, 41 km long and up to 5.5 m in internal diameter. It will be located up to 80 m below ground.
- (2) Series of link sewers over 43 km long and a diameter varying from 200 mm up to 3 m.
- (3) Pumping station, adjacent to Al Wathba Independent Sewage Treatment Plant (ISTP).

**Figure 2.4: STEP alignment and major components**



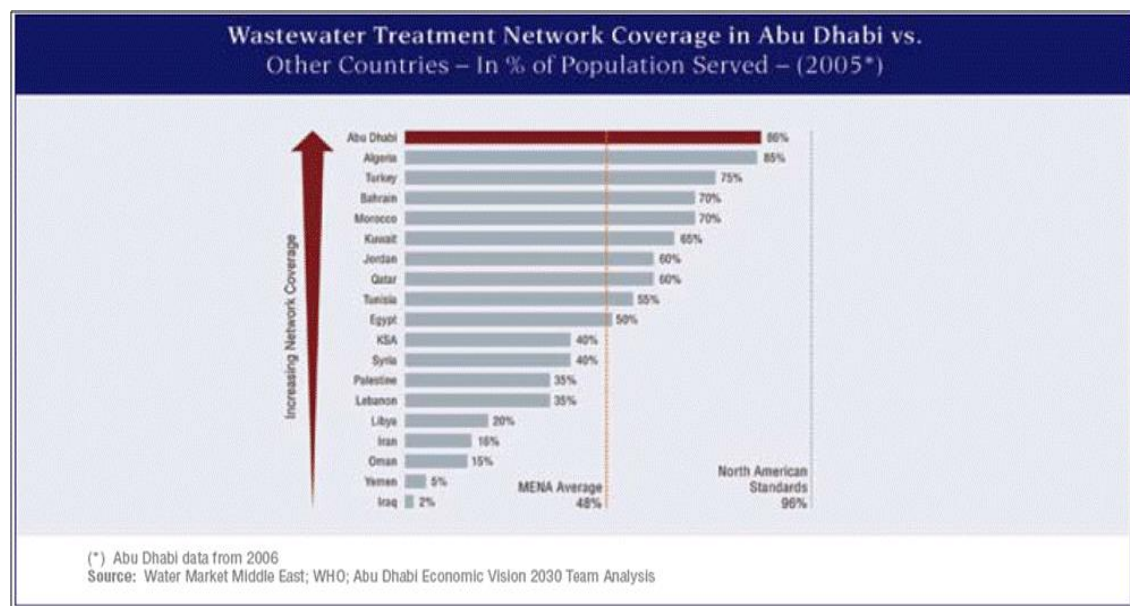
The concept of STEP is to use the sewer links in order to intercept the waste water flows using gravity and to transfer these flows into the deep tunnel sewer. The waste water will be moved by gravity sewer to ISTP, where it will be treated and reclaimed as treated sewage effluent for irrigation purposes.

**Figure 2.5: STEP design allows gravity to take its natural course**



Furthermore, within the economic policy, the priority is to further develop a sufficient and resilient infrastructure capable of supporting the anticipated economic growth. Abu Dhabi already boasts one of the most developed utilities infrastructures in the region. Abu Dhabi performs above average for the Middle East and North Africa (MENA) region and according to Abu Dhabi 2030 vision it shall attain the same level of coverage seen in the most advanced parts of the world. Figure 2.6 shows the waste water treatment network coverage in Abu Dhabi and other countries.

**Figure 2.6: Waste Water Treatment Network Coverage in Abu Dhabi vs. Other Countries**



Having set the long-term economic targets, Abu Dhabi prepared and implemented short-term economic development strategies to ensure its progress towards the Economic Vision 2030. The General Secretariat plays an important role in ensuring that the economic priorities are reflected in the overall government and individual departments' strategic plans. Therefore, this policy focus and associated objectives of the Economic Vision 2030 will have direct impact on the services provided by ADSSC, as there will be a direct correlation between operating



measures of performance (mainly m<sup>3</sup>/day collection and treatment) and anticipated population and economic growth. ADSSC has been trying to meet these challenges by capitalizing on its strengths and exploiting the available opportunities to meet the objectives of Abu Dhabi's Economic Vision. The project department within ADSSC has executed a good number of projects as discussed in the following section.

### **2.3 ADSSC Strategic Plan and Projects Selection Process**

ADSSC executed capital projects (worth a total of AED 5,867,550,000) and 40 maintenance projects ending in 2014, as shown in Appendix 1. These projects were executed via the Project Department's teams and the firm affiliates. ADSSC has around 72 affiliates (28 consulting firms and 44 contractors) involved in its various projects as well as other public utility projects in the city. For the purpose of this research, the senior management of ADSSC was responsive to the researcher's request and granted the researcher the necessary access to obtain information related to these projects. Following the discussion and guidelines of section 3.5.1 related to case selection, the researcher adopted a two-stage screening procedure. The first stage consisted of collecting relevant quantitative data about the entire pool from the archiving files, as shown in Appendix 1. Ten cases were then selected on the basis of the cost and schedule index with a resulting value being closer to one indicating high performance and much less than one indicating low performance. Heterogeneous sampling was chosen to ensure data collection from a diverse range and to serve as good cases to represent the capital projects within the setting. The perceived low performing cases group included five projects of different scope and nature to ensure diversity. The perceived high performing cases group also included five projects of different scope and nature to ensure diversity within the group, as well as to allow cross checking for similarities while conducting cross-group analysis. As shown and justified in Table 2.1, ten projects were selected to find explanations for the research questions. The next chapter delivers within-case analysis for the first group of case studies (four cases) that includes data analysis, and discussion of results.

**Table 2.1: Case Studies and Selection Process**

Case	Case Title	Selection Process
1	Project 1755 (Al Wathba Enhanced TSE Treatment Plant)	It is a contracting type irrigation project, which involved taking TDC water for further treatment. The project was awarded to a company from Singapore. This project was their first in the region. The overall cost of the project was divided between a capital project worth AED 30 million and maintenance and an operation worth AED 15 million for 5 years. The design and construction phase of the contract was 9 months in duration, including commissioning. The contract also included the operation and maintenance of the plant for 5 years. This project scores 1 for cost and 0.43 for schedule according to the cost and schedule index and therefore was categorised among the low performing projects. The project document was available and access was granted to project archive files. The project client, consultant and contractor project managers were also available for interviews. This project was then selected among the perceived low performing project case studies.
2	Project 1149 (Mafraq WWTP Capacity Enhancement)	This is a contracting type project for the enhancement of the capacity of the Mafraq Water Treatment Plant located in the Abu Dhabi Mainland area. It was awarded to a local contracting company (CONCORDE). The overall cost of the project was AED 44904258. The construction phase of the contract was 300 days in duration from the letter of award. This project scores 1 for cost and 0.80 for schedule according to the cost and schedule index and therefore was categorised as among the low performing projects. The project document was available and access was granted to project archive files. The project client, consultant and contractor project managers were also available for interviews. The project has a different scope and nature of case 1 to ensure diversity among the same category. This project was then selected among the perceived low performing project case studies.
3	Project O-1185 (Construction of sewerage connections and related Works for Isolated Properties in Abu Dhabi Mainland and Island - Phase 1)	It is a contracting type project. This project was work order-based project that included the construction of sewerage connections and related works for isolated properties in Abu Dhabi Island and Mainland under. It was awarded to a local contracting company (Al Jabir). This project was their first in the sewerage industry. The overall cost of the project was AED 180000000. The construction phase of the contract was 911 days in duration from the letter of award. This project scores 1 for cost and 0.35 for schedule according to the cost and schedule index and therefore was categorised among the high performing projects. The project document was available and access was granted to project archive files. The project client, consultant and contractor project managers were also available for interviews. The project has a different scope and nature of case 1 to ensure diversity among different category. This project was then selected among the perceived high performing project case studies.
4	Project O-1484 (Construction of Sewer Connection and Related works in Abu Dhabi Island and Mainland Phase II)	This is a contracting type project to construct the sewer connection and related works in Abu Dhabi Island and Mainland Phase II. It was awarded to a local contracting company (ADMAC). The overall cost of the project was AED 128,995,305. The construction phase of the contract was 24 months in duration from the letter of award. This project scores 0.91 for cost and 0.83 for schedule according to the cost and schedule index and therefore was categorised among the high performing projects. The project document was available and access was granted to project archive files. The project client, consultant and contractor project managers were also available for interviews. The project has a different scope and nature of case 1 to ensure diversity among the same category. This project was then selected among the perceived high performing project case studies.

Case	Case Title	Selection Process
5	Project O-10525 (Design and Construction of Razeen Labour City Wastewater Treatment Plan)	This is a contracting type project to design and construction of Razeen labour City wastewater treatment plant in Abu Dhabi. It was awarded to an international contracting company (Besix) who had a joint venture with a local sponsor. The overall cost of the project was AED 50,469,212.84. The construction phase of the contract was 24 months (including a 12-month Warranty Period) in duration from the letter of award. This project scores 1 for cost and 0.94 for schedule according to the cost and schedule index and therefore was categorised among the high performing projects. The project document was available and access was granted to project archive files. The project client, consultant and contractor project managers were also available for interviews. The project has a similar nature of case 1 where the contractor was based overseas and both included design and construction in their scope. It was therefore selected to ensure diversity among the same nature. This project was then selected for the confirmatory cases and among the perceived high performing project case studies.
6	Project O-1692 (Construction Work for Upgrading of TSE Pumping Station and Pressure Mains and Ghayathi Wastewater Treatment Plant)	This is a contracting type project to increase the capacity of the plant at Ghayathi to prevent overloading. It was awarded to a local contracting company (Al Nasr). The overall cost of the project was AED 78,500,148.00. The construction phase of the contract was 24 months in duration from the letter of award. This project scores 1 for cost and 0.63 for schedule according to the cost and schedule index and therefore was categorised among the low performing projects. The project document was available and access was granted to project archive files. The project client, consultant and contractor project managers were also available for interviews. The project has a different scope and nature of case 2 to ensure diversity among the same nature of scope. This project was then selected for the confirmatory cases and among the perceived low performing project case studies.
7	Project O-1086B (Construction of Trunk Sewers and Associated Treated Effluent System for Al Wathba (Lot 'B'))	This is a contracting type project to construct the Trunk Sewers and Associated Treated Effluent System for Al Wathba (Lot 'B'). It was awarded to a local contracting company (ADMAC). The overall cost of the project was AED 723,073,060. The construction phase of the contract was 18 months plus a 12-month maintenance period in duration from the letter of award. This project scores 0.86 for cost and 0.46 for schedule according to the cost and schedule index and therefore was categorised among the low performing projects. The project document was available and access was granted to project archive files. The project client, consultant and contractor project managers were also available for interviews. The project has same scope, nature and contractor of case 3 to ensure similarity among the same category. This project was then selected for the confirmatory cases and among the perceived low performing project case studies.
8	Project O-1434 (Al Ain Asset Enhancement Scheme - Construction of Trunk Sewer Network and TSE Infrastructure – Part 1)	This is a project a contracting type project to construct the Trunk Sewer Network and TSE Infrastructure – Part 1 in Al Ain. It was awarded to a local contracting company (GCC). The overall cost of the project was AED 749, 262, 78.38. The construction phase of the contract was 24 months in duration from the letter of award. This project scores 1 for cost and 0.83 for schedule according to the cost and schedule index and therefore was categorised among the high performing projects. The project document was available and access was granted to project archive files. The project client, consultant and contractor project managers were also available for interviews. The project has a different scope and nature of case 3 to ensure diversity among the same nature of work. This project was then selected for the confirmatory cases and among the perceived high performing project case studies.

Case	Case Title	Selection Process
9	Project O-1463 (Construction Works Associated With Replacement of Existing AC Sewer Lines At Abu Dhabi Island – Category-A)	This is a project a contracting type project to construct the replacement of existing AC sewer lines and a quick repair at Abu Dhabi Island – Category A. It was awarded to a local contracting company (LINDENBERG EMIRATES). The overall cost of the project was AED 116,026,699. The construction phase of the contract was 24 months in duration from the letter of award. This project scores 1 for cost and 0.60 for schedule according to the cost and schedule index and therefore was categorised among the Low performing projects. The project document was available and access was granted to project archive files. The project client, consultant and contractor project managers were also available for interviews. The project has a different scope and nature of case 4 to ensure diversity among the same nature and scope. This project was then selected for the confirmatory cases and among the perceived low performing project case studies.
10	Project O-1673 (Hameem Development – ZonesScorpt Construction of Sewerage Networks and Pumping Station)	This is a project a contracting type project to construct the sewerage schemes for future development works in Abu Dhabi Emirates – part 2 under contract O-1248. It was awarded to a local contracting company (ADMAC). The overall cost of the project was AED 92100,000.00. The construction phase of the contract was 24 months in duration from the letter of award. This project scores 1 for cost and 0.80 for schedule according to the cost and schedule index and therefore was categorised among the high performing projects. The project document was available and access was granted to project archive files. The project client, consultant and contractor project managers were also available for interviews. The project has a different scope and nature of case 7 to ensure diversity among the same confirmatory cases category. This project was then selected for the confirmatory cases and among the perceived high performing project case studies.

## **Chapter 3: Literature Review**

### **3.1 Introduction**

A strong theoretical base and guiding that underline the discipline are lacking in project management research (Killen et al. 2012). Thus, perception and understanding of project management are not clear since there are no commonly accepted paradigms that are leading the discipline. Furthermore, since the project management discipline is developed on experience and different techniques and tool-practicing, evidence that the research literature has had a substantial impact on project management educational level is rather scarce (Almarri and Gardiner, 2014a). As a result, many projects might have not been able to achieve their objectives and desired results. Due to this issue, this study was carried out to contribute to the project management discipline. Therefore, the literature review was made relevant as it discussed 5 main topics which are the core of this research. The literature review concerns five main topics to assist exploring the research questions and to achieve the study's aim and objectives. These topics are (1) Project Management Research challenge and opportunities (2) Resource-Based View (3) Intangible Resources (4) and Project Success Dimensions.

Section 3.2 discusses the Project Management research challenges and opportunities. The literature review for project management research assisted the researcher in identifying gaps in the PM literature and opportunities for literature such as the aim of this study which is to understanding the nature of the relationship between intangible resources and project success in public sector organizations by developing a theoretical model using the Resource Based View (RBV). For example, discussing previous publications helped in finding propositions in other fields that have evolved at the same time as project management, and whose theories and studies had a higher impact. An overview at some of these disciplines suggested observations that can be useful for the project management field. These disciplines suggest that project management should analyse every opportunity to develop a wide range of new directions, which will fulfil existing requirements of the discipline.

Sections 3.3 discuss the Resource Based View in order to support project management research and develop the model of this study by utilizing a strategic management theory such as the RBV. The discussion on the RBV domain was essential because the RBV has been criticized because of the intention for generalization. Therefore, this research has considered different areas of RBV improvements in order to diminish the criticisms that are directed

towards this application. Discussion the criticism of RBV was strongly productive in identifying areas of contribution of RBV to PM research. Furthermore, discussion previous PM research using the RBV gave possible research direction since major limitations are present in these studies, such as their focus on a small number of resources within particular industry settings and their effects on a project's success. Therefore, the research method and tactics must be reflected in order to more effectively examine the key prescription of RBV with a wide emphasis on intangible resources.

Section 3.4 discusses the intangible resources domain in order to achieve objective 1 and 2 of the present study. This discussion assisted in the classification of resources and elements that make up each classification in order to facilitate analysis in the study. Identification of the vital resources would allow insights into which resources are relevant and therefore be able to develop the four research questions of this study in order to identify how intangible resources affect project success. Literature review on previous related work was conducted to facilitate analysis in the research. Furthermore, this section highlights areas of conflict, shows their significance, and proposes a course of action for their remedy. It tackles the areas of criticism of the RBV in research and attends to them empirically and conceptually through a literature review of peer-reviewed publications related to the topic.

Section 3.5 discusses project success and its dimensions as well arguments in the literature on the nature of the success of a project. The discussion in this section assisted the researcher in identifying project success measures and how they could be measured in this study in order to identify how social, human, relational and organizational forms of capital affect project success and then to develop a comprehensive conceptual model that incorporates intangible resources and project success in a public sector organization in Abu Dhabi. Section 3.6 concludes this chapter by summarizing what has been found in the literature in relation to the research problem of the study.

### **3.2 Challenges and Opportunities of Project Management Research**

Today, project management is one of the growing disciplines in many organizations. However, ironically, the statistics of project success indicates that many projects do not accomplish their business results and most projects still fail. This gives possibly a unique opportunity for substantial improvement in the field. In this section, the researcher offers his perspective on the challenge that the project management research community is facing today. The

researcher proposes research directions that may evolve as a central line in the next few years. This may help stimulating the debate and discussion about the future of the discipline. However, even though these views are not unique, they may provide an integrated perspective of the discipline. They may also provide a possible trigger for more discussion that may help attract scholars from other more established academic disciplines and improve the status of project management research.

### **3.2.1 Project Management Challenges and Opportunities**

Through history people have designed and constructed monuments and legendary stories from Roman aqueducts to the Great Wall of China to the Egyptian Pyramids. In the modern age, "projects" is the word that is used for these creations. All these projects are presentations of creativity and ability of human mind to organize, manage, and accomplish mutual people efforts (Shenhar and Dvir, 2007). The Project Management Institute (PMI) has defined a project as *"a temporary endeavor undertaken to create a unique product or service"* and project as *"the application of knowledge, skills, and techniques to project activities in order to meet project requirements"* (PMI Standards, 2004, p.6). Therefore, the author adopted the definition of a "projects" as *a temporary organization and process set up to achieve a specified goal under the constraints of time, budget, and other resources, and "project management" as the managerial activities needed to lead a project to a successful end* (Shenhar and Dvir, 2007, p. 94).

Although the project management discipline progressed in the middle of the 20th century by the first Programme Evaluation and Review Technique (PERT), we still can say that project management is relatively a young discipline. On one hand organizations started witnessing the benefits of organizing work around projects where tools, techniques, and methods became standardized across industries, and businesses. But, on the other hand projects performance is worryingly low, despite the fact of civilizations' long history of monumental projects, and more than 50 years of developing the discipline (Gido and Clements 2014).

Many studies showed low success of projects where some of them are not completed on time, or are over budget. Also, even if they are completed, not many of them meet management or customer expectations. From a Standish Group report<sup>1</sup>, only 28% of projects are successful, 23% are failures and 49% provide only partial answers, with an average fulfillment of 67% of the features defined at project initiation. Other studies (Müller and Turner, 2010a; Turner

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2014) have also confirmed the same or even worse results, where 85% of the projects come short of time and budget goals.

According to (Killen et al. 2012), many tools and applications are based on traditional project management techniques, with enlarged detail and finesses. But for different projects success, all these are usually not enough. Evidently, some projects fail from managerial neglect or because of absence in planning. But also even well-driven projects do not succeed to meet objectives, and on the other extreme even poor planning may lead to a project's success. In every organization similar examples are present. Thus, it may not all be about tools or applications, nor the lack of process for project success or failure, the problem is much deeper. If organizations want to acquire the know-how in this profession, learning the basics of project management is not enough (Shenhar and Dvir, 2007, p. 94). Much deeper understanding of the project management will have an influence on project outcome and education in the field, and in the long run, effect the development of tools and processes (Gido and Clements, 2014).

Kloppenborg and Opfer (2002) discussed 40 years of publications in their comprehensive literature review. They analyzed the publications in five different phases (decades). I Phase – Publications published in the 1960s were focused mostly on planning and scheduling. II Phase – (the 1970s) automated software for project management formed greater than before interest in cost and schedule control. A similar trend continued into Phase III (the 1980s), where the focus of new studies was on life-cycle, costing and risk management planning. In IV Phase (the 1990s) studies on team building and leadership appeared, focusing on human resources, teams and leadership issues. In V Phase (the 2000s) new studies emerged, and their subject of research was mostly about project typologies and contingencies (Crawford et al. 2004; Pich et al. 2002; Shenhar and Dvir, 2007) strategic project management (Cleland and Ireland, 2002; Jugdev 2003; Morris and Jamieson, 2005; Shenhar and Dvir, 2007) and the globalization of projects (Artto and Dietrich, 2004). Recent studies that are not mentioned in this review are such as Douglass (2010), Gido and Clements (2014), Turner (2014) and similar. However, there yet no central paradigm that has emerged so far that is underlying the research and conceptualism of project management or is influencing the practice of project management (Almarri and Gardiner, 2014a). Perhaps we can find answers and propositions in other fields that have evolved at the same time as project management, and whose theories and studies had a higher impact. In the following paragraphs a brief look at some of these disciplines may suggest observations that can be useful for the project management field.



**Technology and Innovation Management Research** – What makes this discipline more influential is the fact that a wide range of comprehensive literature is covered. The first studies that initiated discussion come from the 1960s. One of these studies is the study of Burns and Stalker (1961) that introduced a classical distinction between incremental and radical innovation. Process of innovation, structural, architectural and system innovation, innovative cultures, and the theory of disruptive technologies are the concepts that were the subject of research in these studies until the recent period (Almarri and Gardiner, 2014a).

**New Product Development Research** – Almarri and Gardiner (2014a) also highlighted a second influential direction that has higher effect, namely new product development. In this discussion researchers usually explore the process and individual stages of new product development, as well as effects of different environmental and other critical success factors on these processes.

**The Entrepreneurship Literature** – In this relevant discipline, idea generation, crafting new businesses, and translating ideas into practice in organizations were the main focus of relevant studies.

**Operations Management** –Finally, there is a well-established field of operations management. Here, studies looked at projects as processes and tried to apply optimization techniques to improve project performance. Critical chain is probably the most well-known approach that was adopted to project management.

Ironically, however, although close is nature and often addressing similar problems, very few of these directions have had a significant impact on the discipline and practice of project management. These observations, we believe, suggest that today research community in project management is facing a rare opportunity to exploit a wide spectrum of new directions, which may address the current needs of the discipline. Opportunity, however, is associated with risk. According to Almarri and Gardiner (2014a), two major risks are noted below.

- Central theories that will underline the discipline are lacking. Thus, perception and understanding of project management are not clear since there are no commonly accepted paradigms that are leading the discipline.

- Since all the discipline is developed on experience and different techniques and tool-practicing, evidence that the research literature has had a substantial impact on project management educational level is rather scarce.

Given the challenges just mentioned, it may be the right time to develop a wider research agenda that will address these challenges and bring project management research to do forefront of the academic world. However, to conduct research, scholars have always looked for theory with which they can view the world and test their hypotheses. Furthermore, theory is not only needed to study and explain the real world, it may also help practitioners and educators better understand situations and consequences. By using theory, one can generalize the lessons from case studies and better predict what may work or not, and in what case (Welch et al. 2011). In view of these points, the researcher believes there is a strong need to draw on well-established theories to further develop project management theory. A well-established theory such as the Resource-based View (RBV) of the firm. Therefore, in order to achieve the aim of this study, discussion on Resource Based View (RBV) is followed to assist in identifying previous work concerning PM using RBV to provide critical analysis of these studies and to identify further challenges and opportunities.

### **3.3 Resource-Based View (RBV)**

The Resource-based View (RBV) as a strategic management theory that is used to examine how resources can drive competitive advantage (Almarri and Gardiner, 2014a). If one company succeeds in creating and delivering more value than its competitors do (such as higher project success rate), it is said that the company has competitive advantage (Kotler and Armstrong, 2011). According to Killen et al. (2012), companies can build their sustainable competitive advantage on the resources that are hard to imitate. The main concept on which the RBV is based on is that resources are homogeneous crosswise with other organizations. By utilizing this concept different success rates among organizations might be described. Barney et al. (2011, p. 1302) also commented on competitive advantage by claiming that “if a firm is to achieve a sustained competitive advantage state, it must acquire and control valuable, rare, inimitable, and non-substitutable (VRIN) resources. It is not easy for one company to imitate resources that are customized to specific settings and advanced over time. This is exactly a factor where a company can build competitive advantage and rely on its resources to capture benefits and value in return. Based on the Resource-based View of the firm concept, intangible resources are more likely to be rare and hardly imitable. Killen et al. (2012, p.107) mentioned examples of tangible and intangible PM resources. The first include “methodologies and practices (know what)”; while second include “tacit knowledge sharing process” and

“facilitation (know how)”. Therefore, for the purpose of this study, the following definition is adopted:

- The resource-based view (RBV) is a model that sees resources as key to superior firm performance. If a resource exhibits VRIO attributes, the resource enables the firm to gain and sustain competitive advantage (Rothaermel 2012).

The RBV has become one of the most influential strategic management theories cited in strategic management literature due to its immediate face validity, appealing core message, and ease to grasp and teach (Kraaijenbrink et al. 2010). As Kraaijenbrink et al. (2010, p. 351) stated, what makes the RBV one of the significant strategic management theories in strategic management literature is its “immediate face validity”, “appealing core message”, and “ease to grasp and teach”. This assumption can support the overall aim of the present study because such a model can support scholars and practitioners to easily investigate a firm’s profile of resources in order to improve project success. However, these advantages are also subject of criticism. All these criticisms are related to definitions that RBV is centred on, the conceptual and empirical methodology, and also deficiencies of the concept. The opponents (Truijens 2003; Kraaijenbrink et al. 2010; Kristandl and Bontis, 2007) want to temper what they refer to as an overenthusiastic attitude for the RBV, while the supporters (Almarri and Gardiner, 2014a; Foss and Knudsen, 2003; Killen et al. 2012) feel the advantages outweigh the disadvantages and that with minor modifications to the theory, it will uphold its historical advantage over other theories and contribute to the advancement of research in other disciplines such as project management (Kagaari et al. 2010). The author of the present study takes up the position together with other studies that firmly support the RBV theory in relation to research carried out in PM contexts. For example, the work of (Killen et al. 2012) in the four diverse organizations concluded that PM research outcomes can be supported by the application of strategic management theories such as the RBV. Furthermore, the wealth of advantages of the RBV concept to researchers and practitioners cannot be ignored simply because the concept is not perfect or cannot easily be generalized. Additionally, the RBV has contributed not only to the development of new extensions of the RBV theory, but also to the success of other theories when integrated with them, such as the agency and transaction cost theories (Lado et al. 2004). Therefore, there are areas for improvement to satisfy the opponents and to bolster the position of the supporters of the theory. Nevertheless, it is widely acknowledged that criticism highlights areas for theoretical improvements. Researchers are constantly challenged, by criticisms in the area to improve their work and validate findings.

Thus, the criticism of RBV is strongly productive in identifying areas of contribution of RBV to PM research. When researchers start studying resources they always suffer absence of terminology. Most of the time, certain statements are characterised in a different way based on the intention of the researcher who initiates their own definition. According to Bontis et al. (2007), this academic dissent is a hindrance to research progress and so far, there is no agreed-on definition. However, in their study, the authors also demonstrated that RBV can be used to define the intangibles of the resources. This may strongly indicate that RBV is not that much distant from definitional ailments. In fact, the main strength of the RBV is that it can support definitions that are consistent with the competitive advantage principles. This can be done by applying a resource-based view of the firm, defining intangibles as a subset of strategic resources, and then testing current definitions against the framework developed.

The reputation that the RBV of organizations has as vital theory is built on a combination of the strategic and organizational insights on the firm's competitive advantage. The RBV is applied into project management with the purpose to identify PM resources that shape the competitive advantage of the firm. The view of the author of the present study is that in the past several decades, the RBV theory has been outstanding in giving a form to the strategic and organizational issues of firms. It has proved its importance in explaining important relationships among elements related to the firm's resources that lead to the maximization of the firm's potential. It was the first to establish that PM resources are viewed as a source of competitive advantage. Therefore, it is important to ensure that the RBV continue to contribute to the success of project management and organizations. Criticisms that are addressed to RBV offer different areas for developments and advance the theory and practice.

Foss and Knudsen (2003, p. 294) argued that "the RBV was built in a hurry by a few key contributors. Arguably, this has resulted in some aspects being less clear and less developed than one may wish them to be". Consequently, further studies about the RBV theory application in PM will improve the success gained in the past period and will also improve the relation between practitioners and researchers. Therefore, in order to conclude this section, we can say that the RBV is a strategic management theory and it is used by decision makers in companies and researchers in the project management discipline. It influences competitive advantage of the organization by allocating specific resources that are aligned with strategy. It also provides information to managers about a company's strengths, actions and decision making. There are areas where RBV can be improved since it was subject of criticisms by

different researchers. Those criticisms were mostly directed toward generalizability and operationalization of the constructs. To eliminate this kind of criticism, in-depth longitudinal studies on refining the definitions used to measure intangible resources in PM are recommended for future researchers. This, as mentioned earlier, can be done through the use of valid operationalization for constructs, the outcome of which will advance the application of RBV in PM research. Furthering such research and putting the theory to work within research or practices will narrow the areas of criticism. Future research should utilize case studies and questionnaires to collect data on RBV utilization in research and practice. The data and its analysis can then be based on multiple sources to strengthen the credibility and validity of the findings, and subsequently help guide further research studies and practices with detailed models and frameworks for achieving competitive advantage. Therefore, with the intention of understanding RBV in a much more comprehensive way, a detail presentation of the project management studies that used RBV is provided in the following sub-section

### **3.3.1 Previous Work of PM using the RBV**

There are studies published in the last decade that have discussed the project management discipline from the RBV perspective (Dzeng and Wen, 2005; Galbreath 2005; Jugdev et al. 2007; Thi and Swierczek, 2010). As we have already cited from Killen et al. (2012), intangible resources are those resources that are rare and hardly imitable. Studies that are similar to this one are discussed below where the discussion is focused on the main findings, contributions and limitations that are to be considered for future studies:

Dzeng and Wen (2005) initiated a discussion on how to evaluate project team strategies using the RBV in order to determine additional contractor by identifying the resource gaps. Fuzzy Delphi method and resource-based theory were used to propose a model. This model lets owner determine the necessary resources that are essential for the project, gauges the abilities of the contractors, and determine the resource gaps. The difference between the analytical result and the owners' actual decisions are compared, and these differences are explained in this study. The intention of this study was to explain, in retrospect and using resource-based theory, the decisions made to include additional contractors, by the project owner of Taipei 101. When the project owner has information on contractor capacity, if necessary he can include other contractors, where the first one would be the prime contractor and others will support it by making up a team. The survey results suggest that resource based theory may help an owner determine whether to include additional contractors, by identifying resource gaps resulting from the insufficient resource capacity of the prime contractor.

However, since all of the owner's decisions related to selecting additional contractors were not explained in this study, particularly when another contractor was hired because of project timing, bid pricing, or due to the fact that resources could not be shared among contractors (e.g., cash), the analytical result, using resource-based theory, should not be used as the sole basis for determining the inclusion of additional contractors. According to this study, contractor resources were divided into assets and capabilities. There are two types of assets and they contain:

- Tangible assets – plant, construction equipment
- Intangible assets – patented construction methods, in-house geographic data.

Capabilities include technological management abilities, operational abilities, innovation abilities and experience with high-rise buildings. One major limitation of this study is that a broader range of intangible resources (IR) has not been considered as project management is a team based phenomenon and largely contains human and organizational factors. Human factors are considered the main component of intangible resources (Anokhina 2014; Hajrullina and Romadanova, 2014; Hamilton and Liu, 2014) because human resource factors are “valuable, rare, inimitable, and non-substitutable” (Barney 1991, p.1299). This is particularly important with projects related to the public sector as they are more human capital intensive because, in public projects, a large multiplicity of different people, such as maintenance, engineering, and administrative staff, are usually carrying out the work. Project design and execution require an intensive amount of coordination of these different groups of people; therefore, understanding each other and the establishment of relationships become essential factors. Furthermore, the organizational capital represents the organization's most explicit form of intangible resources (Jugdev and Mathur, 2012) as it includes factors that surround employees and form the basis for development as well as usage of other intangible resources. For example, projects for public companies in particular, are considered to be bureaucratic; they have rigid departmentalization, a high degree of formalization and are considered to be organizations with centralized authority. This bureaucracy can cause ineffective communication, inflexibility and a lack of cooperation; therefore, the organizational structure plays an important role in the efficiency of managerial processes (Marr and Adams, 2004). Furthermore, project teams usually work within their own realm in order to have effective communication; therefore, organizational structure plays an important role in order to ensure high-performing project team members. Additionally, the organizational infrastructure of processes and systems is important for the enhancement and deployment of other resources

for project success (Marr and Adams, 2004; Litschka et al. 2006) since they can determine how workflows and processes can be handled. The organizational capital can help in bringing stability and quality to the project, as well as providing a context for teams to work in. Therefore, organizations that do not focus on organizational capital may lose the characteristics enabling them to succeed in the market (Jugdev and Mathur, 2012).

Jugdev et al. (2007) explored the role of intangible project management assets in achievement of competitive advantage from the project management process through it being valuable, rare, inimitable, and having organizational support. An online survey was used as a data collection tool for this study. The data collected were statistically analysed and the main factors (dimensions of the constructs) of tangible asset factors, intangible asset factors, and competitive characteristics, were determined by using exploratory factor analysis. Multivariate analysis was used to identify the relation among these project management assets and project management process characteristics. The final results and conclusion of the study were that a main source of competitive advantage of a firm is in intangible factors, either directly or as mediator in the relation among tangible project management assets and the competitive characteristics of the project management process. Before this study only few of other studies used RBV for application to project management. Thus, this study contributed to the theory of RBV and its usage in the project management discipline that plays an important role in competitive advantage. As most exploratory studies this study has some limitations. Some of the limitations are that instrumentation has to be further developed in a way that additional literature has to be researched and analysis of a database has to be done; the model and constructs are to be refined, and the model and hypotheses have to be tested on a larger sample. Even though the sample size for this study was reasonable, one membership mailing list is used and it possibly represents an element of sample bias in terms of study generalizability. Due to the limited scale of the study it might be good to conduct more surveys with more than one membership mailing list. Furthermore, more items might have to be used in the survey and these items have to be developed by consulting more careful definitions. For example, the relationship between creative problem solving and planning may enable advanced and well-organized problem-solving through different ways such as the identification of critical resources, the organization of ideas as they are developed, the acquisition of skills and social support, and the implementation intentions (Hicks 2013; Proctor 2014). Furthermore, the creative capacities of sharing and knowledge management are increased by the social capital as it helps in solving conflicts, speeds up the learning process

and integrate knowledge of tactics (Roberts and Chaminade, 2002; Bueno et al. 2004). Therefore, social factors are important and especially relevant to public projects since they employ different occupational groups and relationships among them are based on trust, and shared norms and values (Lesser and Prusak, 1999). This can play a critical role for a project team because they can affect the willingness to exchange information and knowledge (Inkpen and Tsang, 2005).

Scott-Young and Samson (2008) also used RBV for the process industry in order to conduct a study on project team factors. A comprehensive range of team success factors are gauged by the relative importance of each. The main contribution and value of this study are that it addressed some of the methodological problems in project team research. Also, usage of metric outcome benchmarks delivers another contribution of this study. By this the direct comparison of projects with each other was enabled. Moreover, quantification of the influence of each success factor on each of three project outcome components was allowed. The general team and project management literatures were reviewed for this study and a theoretically based, five-dimensional model of organizational context, project team design, project team leadership, project team processes, and project outcome factors, was tested. This study has some limitations. One of them is the small sample size of 56 project teams, even though there are studies that had even smaller sample size (e.g., Stewart and Barrick (2000) studied 45 teams). This sample size might have limited the authors in a way that they could not test a more comprehensive model of project team factors. Also, because sample was from the capital projects executed in the process industries, caution should be applied when generalizing findings to other project team contexts such as the public sector. For example, the national culture of the country which project managers are working in can influence their leadership attributes status; behavior and influences (El-Sheikh and Pryke, 2010). This because of the culturally exclusive forces in the country or regions in which the leaders operate. Furthermore, project performance can be influenced by the extent of embedded networks (Chinowsky et al. 2008) as contract members in public projects face more restrictions that can lead to uncertainty whether public projects will receive benefit of relational transactions and good relationship quality between contracting parties.

In conclusion, the studies that are presented above indicate that critical intangible resources in the form of assets are a determinant factor in project success. This indication gives possible research direction since limitations are present in these mentioned studies, such as their focus on a small number of resources within particular industry settings and their effects on a



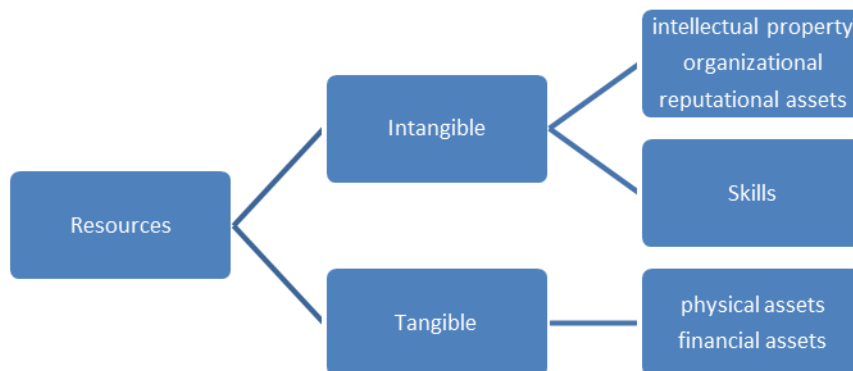
project's success. Therefore, more research methods and tactics must be reflected in order to more effectively examine the key prescription of RBV with a wide emphasis on intangible resources. These resources are essential and very important in creating value that will ensure acceptable project performance (Almarri and Gardiner, 2014a). Intangible resources that are made and organised during project realization are the factor on which differential performance of projects is dependent. As Winch (2010) stated, tangible resources are flexible and can be more easily imitated than intangible resources, therefore, intangible resources play a more important role for competitive advantage formation. Even though intangible resource factors play important role in project success they have received little attention in the PM academic research (Killen et al. 2012) as compared to the tools and methodologies of project management. Since we can see the importance of intangible resource factors they are further discussed in the following section, and the focus of discussion is on how they are classified, how project performance relies on them, and how each intangible resource factor influences project success.

### **3.4 Intangible Resources (IR)**

In general (as classified in figure 3.1), resources are classified into two categories: tangible resources and intangible resources (Hall 1992). Tangible resources include all physical items a firm has, such as raw materials, facilities, and other equipment; on the other hand, intangible resources include all items that do not appear in the balance sheets or material reports such as reputation, organizational culture, and internal control (Galbreath 2005). For the purposes of this research, the tangible/intangible resource constructs are conceptualized in accordance with (Galbreath, 2005):

- Tangible resources (physical and financial assets)
- Intangible resources as assets (intellectual property, organizational, and reputational assets).
- Intangible resources as skills.

**Figure 3.1: Resource Classification**



According to Hall (1992), intangible resources are categorized into two main parts. The first is people-dependent and the second is people-independent. In addition, the study is based on Katz and Kahn's (1978) proposal of resource classification into three categories. Those three categories are conversation, input and output-based. The typology from this study was used as the base for other studies as well (Aaker 1989; Carmeli 2004; Diefenbach 2006; Fernández et al. 2000; Haanes and Fjeldstad, 2000; Hall 1992b; Teece 2007). As Johanson et al. (2001) stated, project activity is managed by interaction of persons in team and other human capital that are creating intangible resources. Thus, these studies were developed because projects are essentially a team-based phenomenon. In Johanson et al.'s (2001) study the resources are classified in four different categories, are determined from the employees' knowledge, the organization's infrastructure, and external stakeholders' relationships. Nevertheless, based on O'Donnell et al. (2006), intangible resources are taking important role in numerous multidisciplinary fields of study. Those studies contain several methods, meanings and concepts. In the literature many different terms are used for intangible resources such as intangible assets, and intellectual capital. This leads to the fact that intangible resources are not consistently defined (Marr and Moustaghfir, 2005).

Many different studies have presented the importance of intangible resources. After surveying managers of ninety-five companies in the UK, Hall (1992) exposed that intangible resources, such as the human capital, corporate culture and the firm's reputation, were ranked as the most important resources in building sustainable competitive advantage.

Jugdev and Mathur (2012) presented a conceptual framework of project management resource classification as sources of competitive advantage. In this paper, RBV of the firm and project management literature was used to identify the level of competitive advantage from 17 project management resources considering the extent of complexity and level of leverage in the project management process. In the proposed conceptual model relationship between four categories of resources and their contribution to competitive advantage are shown. Those four categories were valuable, rare, inimitable, and organizationally supported.

In conclusion, based on the above discussion, and the fact that resources are not heterogeneous across other organizations and such resources are constantly associated with better performance (the RBV concept), intangible resources are more likely to satisfy the requirement of being rare and inimitable (Killen et al. 2012). Therefore, in order to understand better how intangible resources influences project success, individual components of intangible resources that fit the assumption of the RBV in terms of being valuable, rare, inimitable, and non-substitutable (VRIN) are discussed in the following sub-sections.

#### **3.4.1 Human Capital**

Human capital is considered the main component of intangible resources (Cheng et al. 2010; Kianto et al. 2010; Martín-de-Castro et al. 2011; Santos-Rodrigues et al. 2010; Steenkamp and Kashyap, 2010; Zigan and Zeglat, 2010; Abdullah and Sofian, 2012; Anokhina 2014; Axtle-Ortiz, 2013; Campbell et al. 2012; Corrado et al. 2012; Hajrullina and Romadanova, 2014; Hamilton and Liu, 2014; Jardon et al. 2012; Komnenic and Pokrajcic, 2012) because human resource factors are “valuable, rare, inimitable, and non-substitutable” (Barney 1991, p.1299). The researcher suggests that organizations involved on projects related to the public are more human capital intensive because, in public projects, a large multiplicity of different people, such as maintenance, engineering, and administrative staff, are usually carrying out the work. Project design and execution require an intensive amount of coordination of these different groups of people; therefore, understanding each other and the establishment of relationships become essential factors. Knowledge may also be seen as the most important of these resources, which is confirmed by the empirical studies of Habersam and Piber (2003), who concluded that knowledge, is an essential part of human capital. Peng et al. (2007) also concluded that staff capabilities are one of the critical factors and experience and skills were also concluded to be very relevant for success (Mayo 2000; Bukh 2003; Habersam and Piber, 2003). Furthermore, knowledge held by an individual, experience, and know-how increases the value of their contribution and their productivity. Personal contacts and relations,

reputation, and intelligence are also included among them. Therefore, investing in human capital adds value for any organization to increase project success. Finding out what are and how do the human critical success factors influence project outcomes in public sector organizations is an important exercise to develop the new coherent and integral framework. Here, are the critical identified factors related to the human category found in this research study are identified in the following paragraphs.

**Team leadership** – In recent years, many studies have focused on team leadership (Anantatmula, 2010a; Khanaposhtayi and Abyane, 2015; Yakhchali and Farsani, 2013; Kissi et al. 2013; Lindgren and Packendorff, 2009; Lundy and Morin, 2013; Müller and Turner, 2010a; Nixon et al. 2012; Rausch et al. 2014) as a human capital that increases project success. Lindgren and Packendorff (2009); Müller et al. (2012); and Nixon et al. (2012) claimed that the project manager's leadership role is of great importance in motivating people and creating an effective working environment in order for the project team to meet project success. It is also important to mention Kissi et al. (2013) study where they used a questionnaire survey to collect data from 112 project managers in UK project-based organisations, and in their study of transformational leadership behaviour of portfolio project managers was found to have a positive and significant relationship to project performance. Pandya (2014) confirmed that project leaders should have high skills to manage change, handle behavioral and emotional flares with internal and external stakeholders, assure resource availability, and build relationships to create a high performance team. To do that, he claims that project leaders should have honesty, vision and integrity. Suprpto et al. (2015) claimed that project leaders should be able to motivate and inspire their team and stakeholders to embrace change and the strategies. However, these may raise a question while project leaders are working in a high-power distance culture such as the UAE as the national culture of the country which project managers are working in can influence their leadership attributes, status; behaviour and influences (El-Sheikh and Pryke, 2010). Therefore, these traits and style may not be enough to ensure project success. Therefore, as part of achieving the present study objective 2, this study examined the influence of the project manager national culture skills on project outcome.

In many different studies (Cerimagic, 2010; De Vries, Bakker-Pieper, and Oostenveld, 2010; Overby and Suvanujasiri, 2012) the area of leader focus was addressed as an importance of personality, criteria or styles measures (e.g., task-oriented, relation-oriented and participative-oriented). Di Schiena et al. (2013) mentioned in their study three different areas

where leadership should be analyzed, namely, the leader, the followers and the organization. Discussing organization focus Aubry et al. (2010 p.771) and Qubaisi et al. (2015, p. 235) stated that certain leadership styles have substantial effect on the organization level, for example, a “transactional leadership by leading people based on maturity life cycle level of responsibility can be undertaken by someone in a specific situation.”

However, to be a good project leader, it is not only about titles, roles, or authority, it is also about time, experience, mentorship, mistakes and successes. Companies who engage professionals with better management and leadership skills rather than technical skills can expect that the project manager that lacks technical skills may bring a serious barrier to an organization (Toor et al. 2006). This is because if a project manager is well versed and experienced in the application of project management principles, yet is relatively new to the industry, the principles may not be easily applied because the project manager may have difficulty with the terminology, the technology, and knowing when and what questions to ask and sufficiently being able to understand the responses. This is particularly important with projects related to the public sector in the utilities. Project-based public sector departments can be seen as typical knowledge-based organizations, and technical skills play a significant role in project success. There is a large multiplicity of different types of engineers and technicians who are carrying out the work of design and execution. This requires an intensive amount of technical knowledge and understanding of each other. Therefore, as part of achieving the present study objective 2, this study examined the influence of the project manager technical skills on project outcome.

**Team experience** – Research in the last decade on learning-by-doing Alzahrani and Emsley (2013); Ajmal et al. (2010); Huckman and Staats (2011); Easton and Rosenzweig (2012); Staats (2012) has highlighted the important role of investigating various measures of experience and their relationship to the project performance. They related experience and improvements through the time in different business contexts and in most of these studies, measurement methods such as cumulative production volume, or prior completed projects were used for experience quantification. There is also empirical research which focuses mostly on learning-by-doing, which proposes that multidimensional observation of experience is necessary in the team settings (Huckman and Pisano, 2006; Reagans et al. 2005; Argote and Miron-Spektor, 2011; Lapré and Nemhard, 2011). Related to this, Reagans et al.’s (2005) studied the effect of experience with performing joint replacement surgeries on procedure completion time. The study highlighted different types of experience such as individual experience, organizational

experience, and experience working together on a team. Huckman et al. (2009) stated in their study that team familiarity and the role experience of individuals within a team (e.g., project manager) progresses operational performance through time. In the study of (Easton and Rosenzweig, 2012) the role of individual experience, organizational experience, team leader experience, and experience working together on a team (team familiarity) in the context of improvement teams was presented. The main analysis of the study was based on archival data generated by these improvement project teams over a six-year time span. However, the findings of the study showed that out of four experience variables that were studied, team leader experience displayed the strongest relationship with project success; the variable that followed was organizational experience. Moreover, contrasting previous studies on work teams, no relationship between individual experience or team familiarity and project success was found, beyond that explained by team leader and organizational experience. This could be due to the limitation of this study as the analysis involved data collected from a single firm. However, by collecting detailed, firm-specific data from archival sources, conducting multiple interviews, and by visiting the research site, the study could have been able to develop a very rich understanding of the research variables of interest and the study context (Huckman et al. 2009). Therefore, it is still not clear to what extent results from these studies can be generalizable to other settings such as the public sector. Future research is needed to assess the extent to which the findings are applicable to others. Particularly, with Project-based public sector departments as they are typical knowledge-based organizations, and experience play a significant role in project success. Thus, as part of the present study objective 2, the present study explored experience in order to understand the effects of different types of experience on project outcomes. Specifically, the study investigated the following research questions: how the human capital intangible resources such as experience effect project success in the public sector. In particular, how individual experience, organizational experience, team leader experience, and team familiarity contribute to project performance in this context.

**Creative Planning ability** – Industry practitioners recognized a long time ago that how well pre-project planning is conducted has a great impact on project outcome (Wang and Gibson, 2010). At an earlier study, Mumford et al. (2001) made a comprehensive literature review on creative cognition models focusing on how individuals recognize problems, formulate initial plans, refine their plans, and eventually implement those plans. In their study, they found that implementation planning is one of the models of creativity most incorporated in the studies. There are also recent studies conducted in the field of psychology (Glover et al. 2013; Hayes

2013; Hicks 2013; Nelson 2013; Proctor 2014). The main focus of these studies was also on the cognitive aspects of planning. Those aspects are related to problem recognition by individuals, formulation of initial plans, plan improvements, and finally implementation of plans. From this perspective, the definition of planning we can find in recent studies (Bell 2014; Burke 2013; Kerzner 2013; Idoro 2012; Geraldi et al. 2012a) as the mental simulation of future actions used to organize effort towards goals achievements. When we have a complex task, an individual will show their creativity to bring a useful solution (Burke and Barron, 2014; Hicks 2013; Proctor 2014). Evidently, a plan that is developed with the purpose to implement this solution represents an element of this generation process.

Therefore, recent studies have focused their attention on the relationship between creative problem solving and planning (Caughron and Mumford, 2008; Burke and Barron 2014; Glover et al. 2013; Hicks 2013; Proctor 2014). It was found that planning may enable advanced and well-organized problem-solving through different ways. One way is through the identification of critical resources. The other way is through the organization of ideas as they are developed, and finally through the acquisition of skills and social support. Additionally, implementation intentions can influence plan development. This is because implementation mind-set occurs when a single person focuses their attention towards the practical issues of how, when and where a plan has to be implemented in order to reach a goal, rather than focusing on analysing the feasibility of a plan. Therefore, implementation purposes are the outcome mostly of implementation mind-set rather than a plan or problem (Koole and Spijker, 2000). Thus, as part of the attempt to find an answer to research question 1 on how human capital intangible resources influence project success, project planning, problem solving creativity, and implementation intentions relationships and their effect on project success were examined in a public company to confirm the finding claiming that participants with implementation intentions will generate more creative solutions than participants without implementation intentions.

### **3.4.2 Organizational Capital**

Structural (organizational) capital describes the equipment and organizational structures that support employees to fulfil their duties (Biedermann et al. 2002). According (Stoi 2003), organizational capital includes factors that surround employees and form the basis for development as well as usage of other intangible resources. The organizational capital represents the organization's most explicit form of intangible resources (Jugdev and Mathur (2012). For example, projects for public companies, in particular, are considered to be bureaucratic; they have rigid departmentalization, a high degree of formalization and are

considered to be organizations with centralized authority. This bureaucracy can cause ineffective communication, inflexibility and a lack of cooperation; therefore, the organizational structure plays an important role in the efficiency of managerial processes, as suggested by Zigan et al., 2009). Furthermore, project teams usually work within their own realm in order to have effective communication; therefore, organizational structure plays an important role in order to ensure high-performing project team members. Additionally, the organizational infrastructure of processes and systems is important for the enhancement and deployment of other resources for project success (Marr and Adams, 2004; Litschka et al., 2006) since they can determine how workflows and processes can be handled through the organization. The organizational capital could help in bringing stability and quality to the project, as well as providing a context for teams to work in. Therefore, organizations that do not focus on organizational capital may lose the characteristics enabling them to succeed in the market (Jugdev and Mathur, 2012). Organizational capital can include the organization's norms and guidelines. It can also include organizational and national culture, routines and its strategic alliances. The guidelines and norms include the organization's administrative procedures. The firm's corporate culture and national culture reside in organizational values, principles, and routines. The following paragraphs discuss some of the related factors that may influence project performance based on recent studies.

**Organizational Motivation** – Organizational motivation is one of the crucial aspects for successful projects, but still only a few studies have discussed this very important subject (Rose and Manley, 2012). However, Schmid and Adams (2008) in their study presented a comprehensive review of the current literature and theoretical aspects of motivation in project management discipline. They conducted a survey by asking project managers to tell how they perceive their ability to influence motivation in order to incorporate theory principles into applicability improvements. Two main motivation theories – goal setting and organizational justice – currently lead the organizational management literature and can be used to investigate motivation at the organization level of analysis (Latham and Pinder, 2005). Furthermore, based on Cohen-Charash and Spector's (2001) claim, organizational justice includes three main types: distributive justice, procedural justice and interactional justice. Therefore, Rose and Manley (2012) used four key indicators of motivation at the organizational level that is based on goal commitment and the three types of justice mentioned above. In their case study of an infrastructure project in Australia, a range of negative motivation drivers such as: inequitable contractual risk allocation; late involvement of



key stakeholders; inconsistency between contract intentions and relationship intentions; inadequate price negotiation; inconsistency between the project performance goals and incentive goals; and unfair and inflexible incentive performance measurement processes can compromise incentives provided to contractors and consultants that are responsible to achieve above business-as-usual performance. Therefore, as part of the attempt to answer research question 2 on how an organizational form of intangible resources influences project success in the public sector, this research is planned to determine the generalizability of the results to project management in the public sector in the UAE. Determining the generalizability of the results is important because aligning the motivation of contractors, consultants and clients (in normal public project setting in UAE) to perform better than 'business-as-usual' on a public sector project is a complex undertaking and the costs of failure are high as misalignment can compromise project outcomes.

**Monitoring/Control Strategies** – Two very important management functions that are related to project delivery processes are monitoring and controlling (Burke 2013; Kerzner 2013). Enshassi (1996) describes project monitoring as “the process of collecting, recording and reporting information concerning any or all aspects of the performance of a project”. Otieno (2000, p. 15) describes it as “a continuous assessment of a programme or project in relation to the agreed implementation schedule or plan”.

At an earlier study, Askew et al. (1997) identified in their study sixteen different project monitoring record sources that describe the documents formed over a number of actions. Four out of sixteen sources, such as site visit, site meeting, interim valuation and financial statement, were also present in the study of (Idoro 2012). Interim valuations refer to the report of valuations carried out periodically, such as monthly or bi-monthly, to determine the value of the work completed by the contractor in a satisfactory manner. Financial statements refer to the statement of the account of a project inclusive of payments received from certificates and expenditures. The purpose of (Idoro 2012) study was to match the rates of project monitoring and control strategies usage and their influence on project outcome. Findings showed that out of eight monitoring and control strategies only three influenced the project outcomes. This gives us the conclusion that some of the strategies affect project outcomes while others do not. This study had its limitations. One of them is that a structured questionnaire survey cannot answer how and why questions. This is particularly important with projects related to the public sector in UAE as there are three contracting parties (client,

consultant and contractor) usually carrying out the work. Project monitor and control may require an intensive amount of coordination of these different groups of people; therefore, understanding each other and the establishment of relationships become essential factors. Therefore, there is a need for further research that will bring findings from other cases such as those in the public sector as what was carried out in the present study as part of achieving study objective 2.

**Top Management Support (TMS)** – it is the most important critical success factor for project success (Ika 2009; Jonas 2010; Young and Jordan, 2008; Young and Poon, 2013a). Young and Poon (2013) used fuzzy set analysis of 15 cases in their study, and they showed that top management support is much more necessary than any other success factor, being sufficient for success. Jonas (2010) in his paper explained how management involvement can positively and negatively impact project portfolio success at the same time. The study proposes to practitioners an initial point for designing organizational governance structures and job descriptions to increase the portfolio management performance while implementing or reconfiguring the formal role definition of involved managers. Even in earlier studies than those mentioned above, top management support (TMS) was of big importance in project success (Doll 1985; Garrity 1963; Lederer and Mendelow, 1988; Rockart, Crescenzi, 1984). Garrity (1963) recommended key themes that are commonly cited in many studies, and these themes are as follows:

- Devote time to the program in proportion to its cost and potential
- Review plans
- Follow up on results
- Facilitate the management problems involved with integrating computer systems with the management process of the business.

The first theme has been explored widely with the purpose to help top management to dynamically recognize and concentrate investment on the foremost strategic areas for the organization (Doll 1985; Otoole and Otoole, 1966; Rockart and Crescenzi, 1984). Also, authors put emphasis on the fourth theme (Henderson 1990; Rockart 1988) to guarantee operative managers to take responsibility for distributing the estimated benefits. Sharma and Yetton (2003, p. 4) underlined the necessity for, what they call, “management meta-structuration”. In this study they claimed that institutional context presents increased barriers together with task interdependence increases in a project. Those barriers can only be overcome by

mechanisms such as new support structures, new performance control systems, new co-ordination mechanisms and changes to performance goals. Beath (1991) is one of the authors who significantly advanced Garrity's four themes. According to her opinion, top managers are the most important factor for a successful implementation because they have authority to bring organizational change.

Project management literature suggests that top managers have to understand and realize main benefits for the organization. However, there are still studies on this topic and TMS does not focus on the realization of benefits. Smyrk (2002) and Thomsett (1993) argue that technical experts might lose power if benefits and the role of top management were emphasized. There are also different implications from different studies. For example, Young and Jordan (2008, p. 715) in their study emphasized that a senior board member made the assessment that "with technocrats, the only three things you can be sure of are: nothing would get finished on time, it would always cost vastly more than predicted and it would never do what it was promised to do". There is also interesting differentiation mentioned in the study on project management success and project success.

In recent years, how important top management is to project performance was explained in Young and Jordan (2008) study. In this study we can find evidence that top management support is critical success factor for project success. Also, another study by Young and Poon (2013) that extended Young and Jordan's (2008) study and provided empirical evidence of the importance of top management support for project success. Methodology of the study was organized around case study method with the objective to generalize theory. The main limitation of the study was inadequate types of project that were tested. Only intra-organizational projects were reviewed and three of them were connected to the implementation of an Enterprise Resource planning (ERP) package, one related to a system rationalization and one related to an in-house development project. Those cases make available good evidence that support TMS as the most important Critical Success Factor (CSF) for ERP implementations. For other types of projects more evidence is needed. Also, evidence that has to be demonstrated in future studies is that that TMS will be recognized as even more important for inter-organizational projects for project success. This is particularly important as project performance can be influenced by the extent of embedded networks (Chinowsky et al. 2008) as contract members in public projects face more restrictions that can lead to uncertainty whether public projects will receive benefit of relational transactions and good

relationship quality between contracting parties. Therefore, in order to be sure that TMS is the most important for other types of projects as well, future studies should be performed such as what was carried out in the present study as part of study objective 2.

**Culture** – Previous studies indicated that organizational culture can influence project success (Al-Alawi et al. 2007; Ajmal and Koskinen, 2008; Aubry et al. 2010; Fong and Kwok, 2009; Gray 2001). Al-Alawi et al. (2007) in their research investigated the role of certain factors in organizational culture in project success. Factors such as “interpersonal trust, communication between staff, information systems, rewards and organization structure,” are very important in outlining the relations between staff and in turn, providing possibilities to break obstacles for project success. Fong and Kwok (2009) also stated that organizational culture very much depends on honest communication, respect for people, trust, and cohesive relationships. Also, Aubrey et al. (2010) emphasized that organization culture that supports and reinforces best practices in management can influence project success and depending on estimated influence, there are three levels of organizational culture that can be examined (individual level, organisation or project level and national level):

Many studies suggested different scales or measurements for the individual level (Ahimbisibwe and Nangoli, 2012; Aldulaimi and Sailan, 2012; Cerimagic, 2010; Hofstede et al. 1991; Houghton and Yoho, 2005; Liang and Picken, 2011; Mayfield and Mayfield, 2009). These measures are lack of trust, increased confidence and trust, importance of trust and confidence, lack of confidence, effects on dispute resolution and delays, mutual confidence among partners, long-term working relationships and likelihood of disputes erupting.

For the organizational level, Aubrey et al. (2010) and Lewis and Thornhill (1994) identified six types of measures: tribalistic, egocentric, conformist, manipulative, sociocentric and existential.

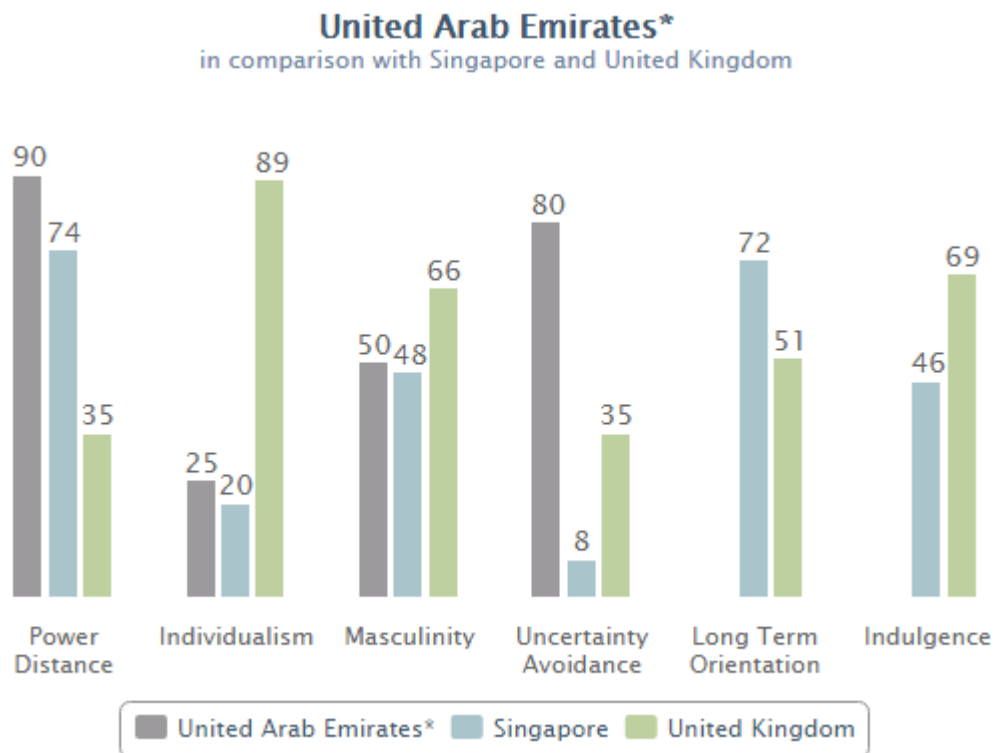
A description of national culture has been given by (Triandis et al. 1986). They described it as a concept which is elusive, difficult to define and fuzzy. Hofstede and Bond (1988) described it as the programming of mind collection that differentiates members of one category. This programming of mind has a tendency to be securely established in the mind of individual but may evolve from generation to generation (Ajiferuke and Boddewyn 1970). Therefore, culture can be described as the widely shared values and beliefs at a particular time within a specific society (Ajiferuke and Boddewyn 1970). These values and beliefs are driven from factors such

as history, religion, proximity, and education which also define the culture (Harris 1979; Ronen and Shenkar 1985).

From Hofstede's definition of culture it can be learned that a project manager can be influenced by cultural dimensions because they do not work in isolation. Hofstede and his colleagues (Hofstede 1980; Hofstede and Bond, 1988) have stated that power distance is an important determinant of leadership styles. Power distance has been defined by Hofstede and Bond as: "The extent to which the less powerful members of organizations and institutions (like the family) accept and expect that power is distributed unequally". This represents inequality that is defined from below, not from above; it suggests that a society's level of inequality is endorsed by its followers as much as by its leaders. Power and inequality are of course very fundamental aspects of any society, and any individual with some international experience is aware that societies are basically unequal, but some are more unequal than others (Hofstede and Bond, 1988, p. 10). Hofstede and Bond (1988) further state that countries with a high-power distance culture, prefer an autocratic leadership style and a strong directive approach by supervisors.

A comparison of the power distance indices (PDI) of the UAE, Singapore, the United States, and the UK as determined by Hofstede is shown in figure 3.2. It is interesting to stress that the UAE's PDI is the highest when compared against Singapore and the UK. The reason it was compared with the UK is to understand the difference in leadership styles of project managers working in a high-power distance culture versus low-power distance culture. The leadership style of project managers working in high-power distance cultures is different from those working in low-power distance cultures. Because of that, project managers who are used to working in a low-power distance culture may not be successful in a high-power distance culture, or vice versa.

Figure 3.2: Power distance index comparison



Source: <http://geert-hofstede.com>

Some countries have developed guides for public sector projects. These guides were made in order to assist project managers in the field with their work. These guides are specific to the particular environment of the country. As an outcome, projects may experience delays and thereby exceed initial time. When it comes to that, extensive delays may provide a possibility for timely and costly disputes and claims. Most important causes of delays in projects were deeply researched by Odeh and Battaineh (2002) where they conducted a survey. Inadequate contractor experience of the environments they are operating in was identified among the top ten most important factors besides other causes such as owner interference, slow decision making, labor productivity, financing and payments, improper planning, and subcontractors. The significant challenge project managers' face is that each environment is not the same and there is the possibility that what works at home may not work in a foreign environment.

Earlier studies have indicated a relationship between national culture and leadership competencies or styles. Javidan and Carl (2004) have stressed that the relationship between national culture and leadership is an important and debatable subject. This indicates a

relationship between national culture and leadership. Other researchers have argued for direct impact of culture on leadership styles, arguing that specific cultural traditions and norms are connected to differentiate leadership styles (Smith and Peterson, 1988). This shows that both national culture and leadership style of a project manager can have an influence on project success. Bennis and Nanus (1985

, p. 62) make an important distinction between management and leadership. House et al. (2004, p. 53) have stated that there is empirical evidence showing leader attributes, status, behavior, and influence vary largely because of culturally unique forces in the country or regions in which the leaders function (Sheikh 2012, p. 49). This indicates that project managers' leadership attributes status, behavior and influence can also differ because of the national culture of the country that they are working in (Sheikh 2012, p. 50). The Global Organization Behavior Effectiveness (GLOBE) study (House et al. 2004) also showed a link between national culture and leadership competencies or culturally endorsed implicit Leadership Theory (CLT) factors. Thus, there is a relationship between national culture and leadership. In their study, Müller and Turner (2007) showed a relationship between leadership and project success. A research study conducted by Sheikh (2012) showed that there was a relationship between CLT factors and project success in a high-power distance culture such as Pakistan. He further identified that there was a positive correlation between bureaucratic and face-saving leadership factors and project success in a high-power distance culture. Because of that, the above-mentioned research studies indicate that there is a relationship between national culture, leadership, and project success. Therefore, the project managers and leaders must have certain leadership competencies that are in relation with the national culture in order to execute and deliver a project successfully in the public as well as the private sector.

For the national level, Chow and Chen (2012), Lee et al. (2012), Hofstede (1991) and Tatum et al. (2003) suggested a measure in five different aspects: power distance, individualism, masculinity, uncertainty avoidance and long-term orientation. The national culture of the country which project managers are working in can influence their leadership attributes, status; behaviour and influences (El-Sheikh and Pryke, 2010). Thus House, Hanges et al. (2004) provided evidence that presents leader attributes, status, behaviour, and influence differ mainly because of culturally exclusive forces in the country or regions in which the leaders operate. Therefore, as stated in House et al. (2004), there is a relationship between national culture and leadership. Also, in a recent study by (Qubaisi et al. 2015), the findings show to what extent project success is influenced by project leadership, and organizational and

national culture. For this study data were collected through online self-administered questionnaire that was addressed in seven entities located in the emirate of Abu Dhabi, UAE, where the sample was diverged by different types of organizations such as banking, oil and gas, construction, IT, regulations and public service. However, since a structured questionnaire survey cannot answer how and why questions additional research on this subject is needed using in-depth interviews such as what was carried out in the present study as part of study objective 2. This is practically important for projects in the public sector as public companies are considered to be bureaucratic, have rigid departmentalization, a high degree of formalization and are considered to be organizations with centralized authority. This bureaucracy can cause ineffective communication, inflexibility and a lack of cooperation; therefore, project leadership may be influenced.

### **3.4.3 Relational Capital**

Previous studies revealed that relational capital influences project success in a positive manner (Chinowsky et al. 2008; Ling and Tran, 2012; Rahman and Kumaraswamy, 2004; Suprpto et al. 2015). Different studies (Azoulay 2004; Chinowsky et al. 2008; El-Sheikh and Pryke, 2010) also showed that project performance can be influenced by the extent of embedded networks. Nevertheless, contract members in public projects face more restrictions that can lead to uncertainty whether public projects will receive benefit of relational transactions and good relationship quality between contracting parties. Therefore, in order to understand how relational capital influences project success, the following actions are presented and discussed in the study of Singh et al. (2008):

- (1) Determine whether higher relationship quality leads to better outcomes in public projects
- (2) Identify relational transaction practices that lead to better relationship quality
- (3) Identify relational transaction practices that lead to better project outcomes.

If the researchers and practitioners succeed in identifying relational transaction practices then that will result in better outcomes that will bring contracting parties a framework and strategies to harmonize their relationships as well as to implement relational transactions in public projects. As a result, (2013) in their study explored the effect of relational transactions on relationship quality and outcomes of public construction projects. The study was conducted with 104 public projects in Singapore and data were collected through questionnaires. The main findings showed that relationship quality and relational transactions have a positive impact on public project outcomes. Those findings also showed that effective information



sharing increases relationship quality, and good relationships further improve time performance, quality performance, and client satisfaction. There are three different ways how project outcomes are affected by adopting relational transaction practices, as follows:

- (1) propriety of means contributes significantly to cost performance,
- (2) flexibility and contractual solidarity have a significant impact on time performance,  
and
- (3) Harmonization within the social matrix and propriety of means allow for a significantly higher level of satisfaction.

The research mentioned gives contribution to the literature by empirically presenting that good relationship quality can positively affect outcomes in public construction projects. Moreover, this study identified RC norms that have a positive effect on public project outcomes and relationship quality. However, using a structured questionnaire survey has not brought answers on how and why questions. For example, contract members in public projects face more restrictions that can lead to uncertainty whether public projects will receive benefit of relational transactions between contracting parties that will help in problem solving. The strong relations between the contracting parties may result in time efficiency because this factor tightens the coordination among the member groups (Ebberts and Wijnberg, 2009) and smothering transition to contingency plans (Uzzi 1997). Thus, using in-depth interviews such as what was carried out in the present study as part of study objective 2 can help to find how and why.

#### **3.4.4 Social Capital**

The focus of the early literature was mainly on the project goals achievement and accordingly techniques and tools that increase the efficiency and effectiveness of individual projects were studied (White and Fortune, 2002). However, more recent research put more focus on the organizational learning as a critical performance driver in project based organizations (Blindenbach-Driessen and van den Ende, 2006; Brady and Davies, 2004; Söderlund, 2004). Organizational learning is commonly defined as the process of sharing, retaining, transferring, and using the newly created project-level knowledge (Argote 2005; Prencipe and Tell, 2001). Therefore, organizational learning is considered as a critical performance driver because prior projects can potentially offer valuable experiences to be applied in similar projects as well as generate new knowledge about the organization's technology base leading to more projects success (Brady and Davies, 2004). However, there are substantial challenges organizational

learning is facing (DeFillippi and Arthur, 1998; Edmondson and Nembhard, 2009; Keegan and Turner, 2001; Lundin and Söderholm, 1995; Scarbrough et al., 2004). These challenges arise because of the discontinuous and unique nature of project-based work which is mostly responsible for creating intra-firm boundaries which has the potential to hinder the use and transfer of knowledge gained within particular projects by subsequent projects (Gann and Salter, 2000; Prencipe and Tell, 2001). Therefore, it is important to have a full understanding on how project-based organizations can overcome barriers to learning (Lindner and Wald, 2011). Literature has provided evidence that organizational learning is supported by social capital. This is because social capital has the potential to provide access to the resources embedded within (Adler and Kwon, 2002; Gabbay and Leenders, 2001). Therefore, Di Vincenzo and Mascia (2012) defines the social capital of a project team as the quality and structure of the network ties between project team members outside the project through which they can potentially access resources and knowledge.

Social capital is composed of relational, structural and cognitive dimensions (Nahapiet and Ghoshal, 1998). The relational dimension is referred to the nature or quality of ties such as the relationship strength, frequency, closeness, and interaction intimacy (Granovetter, 1973). The structural dimension is referred to the pattern of ties that links actors focusing on the features of relationships between actors such as the number of ties that bind actors together (Ahuja, 2000; McFadyen and Cannella, 2004). The cognitive dimension is referred to the similarity between actors such as shared goals and common interests (Tsai and Ghoshal, 1998). There are conceptual studies (Adler and Kwon, 2002; Nahapiet and Ghoshal, 1998) as well as empirical studies (Tsai and Ghoshal, 1998) asserted that social capital ease the exchange of knowledge resources among organizational units (Kostova and Roth, 2002; Li, 2005), business units (Ghoshal et al., 1994; Hansen, 1999), and projects (Bresnen et al., 2003; Maurer et al., 2011). This is because it influences the opportunity, motivation, and ability within an organization (Argote et al., 2003). Accordingly, social capital can help to overcome barriers coming from lack of opportunity, motivation, and ability to make project-level knowledge available to the organization as a whole (Bartsch et al. 2013).

Lack of learning opportunities arising from the diversity of projects over time can be compensated by the help of social capital. Social interaction ties among project team members can help to bridge these gaps. Social ties link people across different organizational units such as projects (Hansen, 2002). They provide channels and ways for knowledge sharing (Ghoshal et

al., 1994; McFadyen and Cannella, 2004) and therefore provide opportunities for project-level knowledge transfer despite temporal, local, or topical dispersion of projects. Further opportunities for knowledge sharing across project boundaries can be achieved via strong ties among project team members and their intra-organizational colleagues outside the project. It is more likely for team members to meet on a private basis with their colleagues outside the project due to their closeness and intimacy as a result of strong ties (Oh et al., 2004). This makes project-level knowledge increase and available outside the project and therefore facilitates the process of learning. Furthermore, social capital is likely to create motivation to learn across project boundaries. This can bridge motivational barriers to learning that is coming from the high costs of a project, and lack of formal incentives for a project. Strong social ties have the potential to motivate project team members as well as their intra-organizational colleagues to assist each other and share knowledge (Hansen, 1999; McFadyen and Cannella, 2004). Additionally, a high quality and reliability of the transferred knowledge can be achieved via strong ties (Fischer and Pollock, 2004). This can also increase the motivation to use and retain knowledge outside the project. Equally, goal congruence can motivate project team outside the project to share knowledge in order to implement it outside the project and support common goals (Inkpen and Tsang, 2005). Furthermore, cross-project learning can be enabled via social capital despite the fact that unique project features and tasks establish barriers to learning. With more social ties, the likelihood to assess, absorb, and use the provided knowledge will increase as project team members can be supported by specific intra-organizational colleagues outside the project. Additionally, strong social ties add more frequent and close interaction between project team members and their intra-organizational colleagues outside the project (Reagans and McEvily, 2003). This is because such strong ties enable feedback loops and further inquiries where both sides can learn more accurately (Li, 2005). Furthermore, project team members' ability to share knowledge across project boundaries can be further enhanced by shared goals. This is because they constitute cognitive similarity among members which can help to understand each other and therefore correctly use and apply the acquired knowledge (Nooteboom et al., 2007). In conclusion, social capital facilitates learning via the transfer, retention and application of knowledge. Social capital can be conducive to overcoming barriers to learning by creating the opportunity, motivation, and ability to share knowledge across project boundaries, organizations. It can increase learning in a range of different knowledge domains.

Due to the importance of social capital to the human connection aspect as presented above, social capital was included by the researcher. More importantly, social capital is considered for this research because of its relevance to public companies since they employ different occupational groups. Relationships among them are based on trust, and shared norms and values (Lesser and Prusak, 1999) and they play a critical role for a project team because they can affect the willingness to exchange information and knowledge (Inkpen and Tsang, 2005). Social capital strongly influences the extent to which interpersonal knowledge sharing occurs (Gooderham et al. 2011).

Social capital has been subject of study by many researchers (Bartsch et al. 2013; Maurer et al. 2011; Cheng and Zhang, 2015; Connell and Voola, 2013; Rai et al. 2009; Singh et al. 2008b; Krogh et al. 2012; Yang et al. 2014). Singh et al. (2008b) identify a specific type of project success as measured by the productivity of an open source project team. The main findings of this study showed that social capital is not equally accessible to or appropriated by all projects and those results provided the following discussion where:

- (1) teams with greater internal cohesion are more successful,
- (2) external cohesion (cohesion among the external contacts of a team) has an inverse U-shaped relationship with the project's success; moderate levels of external cohesion are the best for a project's success, rather than very low or very high levels of this variable,
- (3) the technological diversity of a contact also has the greatest benefit when it is neither too low nor too high, and
- (4) The numbers of direct and indirect external contacts are positively correlated with a project's success with the effect of the number of direct contacts being moderated by the number of indirect contacts.

However, some studies showed the association between social capital and knowledge leadership. In McCallum and O'Connell (2009) and Uhl-Bien's (2006) studies, it is shown that knowledge leadership influences development of social capital that will result in positive knowledge management outcomes if we consider the relationship-based context. In the work conducted by Cheng and Zhang (2015) on Knowledge Sharing in engineering project design teams, knowledge leadership was measured by the three dimensions of leadership skills, cooperation and trust, and knowledge integration and innovation. All the three dimensions significantly contribute to knowledge sharing through the mediating role of social capital. The

results are not in agreement with Yang et al. (2014) who argued that cooperation and trust may not improve knowledge sharing. This is mainly because knowledge leadership as a relational process is moulded by the relationship-based context in this research (Uhl-Bien 2006). Therefore, the results agree with Krogh et al. (2012) who considered that there was a significant need for the study of leadership development and knowledge creation in a specific context. For this research, the researcher provides a relationship-based context inside which a knowledge leader acts. The relationship-based context requires knowledge leaders to use knowledge leadership to accumulate social capital asset in order to promote knowledge sharing. However, although the work of Cheng and Zhang (2015) improves the knowledge-sharing process by adoption of knowledge leadership through social capital, some limitations remain. First, this research rests on quantitative studies in engineering project design teams. It is not usually generalizable to the entire population phenomenon; thus, further research is required to determine how the findings can be amended to account for other cases. Second, knowledge leaders play an important role in the deployment of strategies, and they also guide team members to carry out the strategies. However, this article has not specifically studied the role of knowledge leaders in knowledge management practices; future research can pay attention to the active and cross role of leaders as supporters of both group-level and individual-level learning processes (Viitala 2004). Third, the focus of this study is on knowledge leadership as a relational process. As supporters of the relational process, knowledge leaders' behaviours have a significant influence on knowledge-sharing outcomes. Further research (e.g., a psychological study), can shed light on knowledge leaders' behaviours and results. Furthermore, future study may also be conducted using in-depth interviews to facilitate effective knowledge sharing, reflection and learning in cross-functional project teams such as what was carried out in the present study as part of study objective 2.

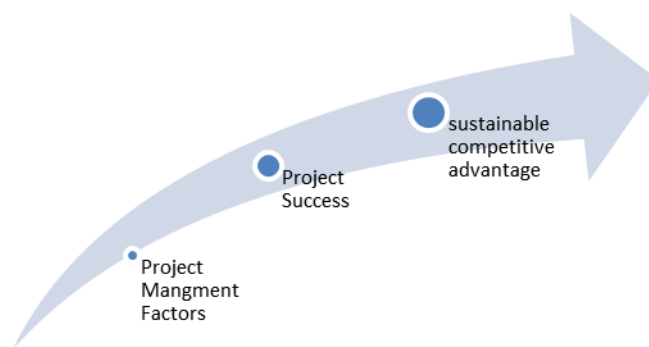
To conclude the discussion on intangible resources, the categorization of intangible resources into human, organizational, relational and social capital outlines the framework of this research. The significant amount of intangible resources within a project usually overwhelms researchers; therefore, researchers have to concentrate on primary resources in order to manage them effectively and efficiently. The small number of previous studies has yet to agree on the critical intangible resources in PM. Identifying the most critical resources would allow insights into which resources are relevant for providing high quality services and creating value to achieve competitive advantages. Taking this into account, approaches tailored to these four categories could be developed that may help in linking intangible resources to project success. Thus, discussion on project success dimension is critical for this study in order to select the

most appropriate dimensions of project success for the current research study taking into account the specific audience that data will be collected from.

### 3.5 Project Success

Project success is critical to the success of organizations that rely upon projects (Pennypacker and Grant, 2003). Companies should analyse factors related to the success of their projects to select strategies likely to offer the best returns and obtain a sustainable competitive advantage.

**Figure3.3: Project Management and Sustainable Competitiveness**



It is also important to make clear that project success is not the same as project management success. In order to understand this in more detail, Kerzner (2009, p.7) defined project management as “the planning, organizing, directing, and controlling of company resources for a relatively short-term objective that has been established to complete specific goals and objectives.” Here we can understand that the role of project management is to guide the delivery or implementation of a project and its deliverables. Thus, a success of project management is related to a process of project delivery within the stated time, budget, and quality requirements. From those points, we can see the difference between project success and project management success. The main difference we can see from the definition that a project is a “temporary endeavor” telling that there is a certain deadline. Time frame usually cannot be used to measure project success. There are reasons why projects are carried out. The main reasons are to satisfy specific need, to solve a problem, and consequently have a specified or unspecified objective. Those objectives should be measured to see project success, and this is regularly only possible after project implementation.

Pinto and Mantel (1990, p. 271) proposed a measurement for project success as follows: “the success in the implementation process; the perceived value of the project; and client

satisfaction with the result.” “Meeting design and planning goals; customer benefits; benefit to the developing organization; and benefit to the defense and national infrastructure” are the measurements proposed by Lipovetsky et al. (1997, p. 98). Atkinson (1999) proposed the square root model of project success where dimensions are divided into 4 categories (the iron triangle, the benefits to the stakeholder community, the benefits to the organization, and the information system). In other words, he divides project success into three categories: doing the process right; getting the system right and getting the benefits right. Shenhar et al. (2001, p. 711) introduced a four-dimensional framework for measuring project success by addressing short-term and long-term project objectives. In this study project success is linked to competitive advantage and comprehensive project framework consists of “efficiency (meeting schedule and budget goals); Impact on customers (customer benefits in performance of end products and meeting customer needs); Business success (project benefits in commercial value and market share); and Preparing for the future (creating new technological and operational infrastructure and market opportunities).” This framework was cited in many PM studies (Bryde, 2008; Dvir et al., 2006; Jugdev and Muller, 2005) and also selected for investigation in the study of (Mir and Pinnington, 2014) on linking PM performance and project success in UAE project-based organizations where teamwork effectiveness was added. Cooke (2002, p. 187) also added some criteria for project management success and project success, precisely, “project management success is measured against the triple constraint while project success is measured against the reasons for undertaking the project in the first place.” The triple constraint mentioned consists of variables of time, cost, and scope. Moreover, some studies even broaden project success measures by using several additional variables. For example, Bourne (2007) proposed three “pillars of project success”. One of these pillars, the criteria of which were related to costs, time, scope, and benefits realization was named the “value delivering” pillar. Arguing on this study, Stefanovic and Shenhar (2007) stated that together with these dimensions, teamwork effectiveness should be incorporated. Furthermore, a comprehensive review of project success literature published in the last decade by Söderland et al. (2012, p.758) identified that the relative importance of success dimensions differ by “individual personality, nationality, project type, and contract type”. Also, Nelson (2013) introduced process-related and outcome-related categories and in both categories there are three criteria. Process-related category consists of time, cost, and product (the triple constraint) while the outcome-related category consists of use, learning and value. In Nelson’s (2013) study, we can also find detailed analysis on 15 retrospective analyses. In this study, he asked five stakeholder groups (project manager, project team, users, sponsor, and top

management) to rank the six success criteria based on their importance. Process-related criteria were the most important criteria for stakeholders internal to the project team and outcome-related criteria were most important to stakeholders external to the project team.

In conclusion, even though a comprehensive literature review on project success and alternative frameworks are available, we can conclude that there is no comprehensive and clear definition of project success and moreover meaningful and measurable constructs of project success need to be developed (Westerveld 2003). Also, it is not the same if we talk about public sector projects, non-profit organizations projects, or private sector projects (Chan and Chan, 2004). Project success will be different for different types of projects. For example, public projects are usually for country developments as socioeconomic assistance and these kinds of projects are different from those such as commercial or industrial projects. Therefore, individuals and stakeholders often will interpret project success in different ways (Cleland and Ireland, 2006; Lim and Mohamed, 1999). Projects differ in size, uniqueness and complexity, thus the criteria for measuring success vary from project to project (Müller and Turner, 2012). It is also important to highlight those individuals and stakeholders will interpret project success differently. Therefore, project success depends on two main components: “the criteria by which the project is judged to be a success or failure, and the causes that result in those criteria being met” (Cleland and Ireland, 2002, p. 218). However, while acknowledging the broad dimensions of project success, the researcher considers project cost, schedule and quality to be the three dimensions of project success found to be appropriate when collecting data from the specific audiences of this research paper. They belong to project management departments that have been created to execute specific government mandates and do not have competition in the same form as private sector organizations. For these departments, cost, schedule and quality are considered as important measures of project success that are driving client satisfaction as well as reflecting the projects’ fulfilment of specifications (Griffin and Page, 1996b). Furthermore, a broader comparative range of exploration of project success criteria, including important soft outcomes from the project team, and the functional benefits a project can provide is recommend in future separate studies where data could be collected from a broad range of audiences. Such future research studies should be undertaken while developing and identifying additional intangible resource factors. For example, the results of this study may not hold outside of the public sector project management department context. Models can also be separately developed in future studies for each of the project outcome measures, as they have been used in this study. Similarly, future models



should be extended to include soft factors such as knowledge creation management and organisational learning. Table 2.1 reflects the justification for the researcher's selection of the three dimensions of project success in this research study.

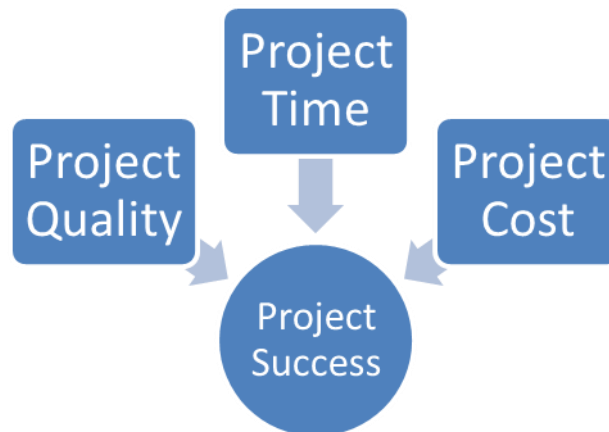
**Table 3.1: Justification for the Project Success Dimensions in the Research**

Component	Justification
Project Success in Public Sector	PM departments in the public sector have been created to execute specific government mandates and do not have competition in the same form as private sector organizations.
	Cost, schedule and quality are driving client satisfaction.
	Cost, schedule and quality are reflecting the projects' fulfilment of specifications.
	Feedback obtained during access to data phase meeting and during semi-structured interviews.
	Evidence seen in case study archiving of supporting documents showing consideration of the 3 project success measures.

For the purposes of this study, definitions of project success and techniques for measurement and, their break down definition have been adopted as having the following characteristics (Pinto and Slevin, 1988a):

- A limited budget – can be referred to as project cost
- A series of complex or interrelated activities
- A defined beginning and end (specified time to completion) – can be referred to as project time
- A specific, preordained goal or set of goals (performance expectations) – can be referred to as project quality.

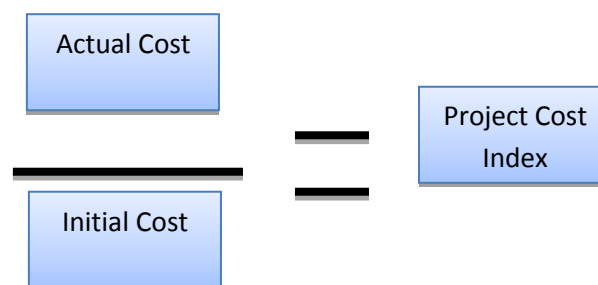
**Figure 3.4: Project Success Dimensions**



Below is an explanation of how average figures for these dimensions can be statistically derived.

**Project cost:** (Can be referred to as limited budget (Pinto and Slevin, 1988a). Project cost can be evaluated based on project efficiency, as given by the Project Management Institute (2002), to gauge the progress and efficiency of a project. Cost index (expressed as 1.00) is the result value by dividing the final cost by the initial cost. If the index is close to one, it indicates high performance and much less than one is regarded as low performance. Total cost includes all owner/contractor costs for process design, production, engineering, the services of project management, initial catalyst charges, licensing fees, and expenditure for post-mechanical completion modifications.

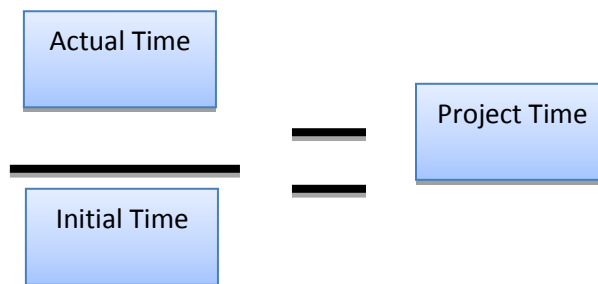
**Figure 3.5: Project Cost Index**



**Project schedule:** A defined beginning and end (specified time to completion) – will this project come in on schedule (Pinto and Slevin, 1988a). Project schedule performance can also be objectively evaluated with the same index measure. This is also given by the Project Management Institute (2002) in order to gauge the progress and efficiency of a project.

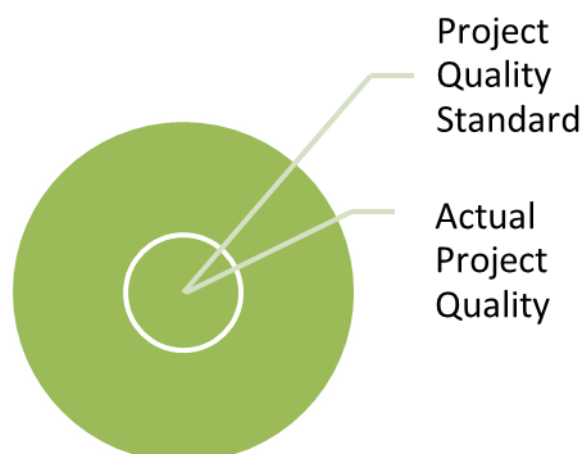
Schedule index (expressed as 1.00) is the result value by dividing the actual duration taken for the completion of a particular project by the initial duration, as per the time plan. If the index is close to one, it indicates high performance and much less than one is regarded as low performance. The construction index measures duration from the first foundation work to the mechanical completion of the project. The prime activities are procuring resources, executing the activities and monitoring and reporting on progress until the facility is ready for start-up.

**Figure 3.6: Project Time Index**



**Project Quality:** A specific, preordained goal or set of goals (performance expectations) – can be referred to as project quality (Pinto and Slevin, 1988a). It is a measure of fitness for use or the constructed facility's operational performance. It is the degree to which the project meets the scope objectives for the technical operating capacity and the quality of the constructed facility.

**Figure 3.7: Project Quality**



### **3.6 Conclusion**

To conclude this chapter, Project Management (PM) research could be supported by strategic management theory and literature such as the RBV. This concept (RBV) can contribute to project management success as well as the success of the overall organization. To link the literature discussed in this chapter in the context of the research question, the discussion on the Project Management (PM) research challenges and opportunities (section 3.2) assisted the researcher in identifying gaps in the PM literature and opportunities. The discussion on the RBV domain (section 3.3) was essential because the RBV has been criticized because of the validity of constructs and the intention for generalization. Therefore, this research has considered different areas of RBV improvements in order to diminish the criticisms that are directed towards this application. As formulated in study objective 2, discussion the criticism of RBV was productive in identifying areas of contribution of RBV to PM research. Furthermore, discussion previous PM research using the RBV gave possible research direction since major limitations are present in these studies. The intangible resources discussion (section 3.4) sets the direction to achieve objective 1 and 2 of the present study. This discussion assisted in the classification of resources and elements that make up each classification in order to facilitate analysis in the study. Identification of the resources allowed insights into which resources are relevant and therefore be able to develop the four research questions of this study in order to identify how intangible resources affect project success. Literature review on previous related work was conducted to facilitate analysis in the research. As part of the attempt to find an answer to research question 1 on how human capital intangible resources influence project success (section 3.4.1), it sets a direction to examine the influence of the project manager national culture skills on project outcome as well as the influence of the project manager technical skills on project outcome. It also sets a direction to explore the experience factor in order to understand the effects of different types of experience on project outcomes. Furthermore, literature review on previous related work shows the importance of exploring project planning, problem solving creativity, and implementation intentions relationships and their effect on project success in a public company to confirm the finding claiming that participants with implementation intentions will generate more creative solutions than participants without implementation intentions. Additionally, literature review on previous related work (section 3.4.2) helped to facilitate analysis as part of the attempt to find an answer to research question 2 on how organization capital intangible resources influence project success. For example, this research is planned to

determine the generalizability of the results to project management in the public sector in the UAE. Determining the generalizability of the results is important because aligning the motivation of contractors, consultants and clients (in normal public project setting in UAE) to perform better than 'business-as-usual' on a public sector project is a complex undertaking and the costs of failure are high as misalignment can compromise project outcomes. Furthermore, there is a need for further research on monitoring and control strategy that will bring findings from other cases such as those in the public sector. There is also a need to be sure that Top Management Support (TMS) is the most important for other types of projects related to the public sector as well. Additional research is also required to find answers to how and why questions using in-depth interviews on the culture factor. Additionally, literature review on previous related work (section 3.4.3 and section 3.4.4) helped to facilitate analysis as part of the attempt to find an answer to research question 3 and 4 on how relational and social capital intangible resources influence project success. For example, using in-depth interviews can help to find how and why to factors related to social capital. In-depth interviews can also facilitate effective knowledge sharing, reflection and learning in cross-functional project teams. On the other hand, discussion on the project success and its dimensions as well arguments in the literature on the nature of the success of a project (section 3.5) assisted the researcher in identifying project success measures and how they could be measured in this study in order to identify how social, human, relational and organizational forms of capital affect project success and then to develop a comprehensive conceptual model that incorporates intangible resources and project success to achieve the study aim. Chapter 4 provides methodologies of how data were collected for this study and what analyses of data were performed in order to achieve the aims and objectives as well as for findings interpretation.

## **Chapter 4: Research Methodology**

### **4.1 Introduction**

This chapter provides full description of the road map for building this case study theory. It starts with philosophical considerations and fundamental considerations about a suitable research strategy. It starts with an ontological and epistemological debate within the research study context and provides justification for the qualitative research method selection. It also provides a view into the main issues of qualitative research, such as tests for validity, reliability and the transferability of the results. The research strategy and refinement of the interview questionnaire are also discussed in the context of the research aim and question and the potential risks while collecting data were explained. This chapter ends with methodological implications of the data collection and approach.

This study has an exploratory focus as it seeks to find how intangible resources influence project success. Such a focus favours the use of a qualitative research design and the case study approach was particularly appropriate as it encompasses the holistic, in-depth study of a phenomenon using a variety of data sources and procedures (Yin 2003). Ten cases were selected for study and provided consistent, differentiated and ambiguous information-rich settings for study that allowed the emergence and interplay of various factors. While the ten project cases were the primary focus of the study, the units of analysis were the capital projects in the utility sector in Abu Dhabi. Two data collection techniques were employed: documentary data analyses and interviews. Documentary analysis was used to gain a deeper understanding of the projects and to identify project specific issues with control implications. The interviews elicited information about social, human, relational and organizational forms of capital affect project success. A key component of the interviews was how identified intangible resources affected project success, drawing on the resource-based view. A total of 30 semi-structured interviews were conducted with project team members, carefully selected on the basis of their critical roles as project managers. The interviewees' role descriptions on the projects included client project managers, consultant project managers, and contractor project managers. By employing three different data sources, convergence of information was achieved through multiple sources. In particular, inconsistencies in information from one source (e.g. interviews) were clarified using data from the other sources. Thus, collaborative evidence on pertinent issues was obtained from multiple sources to confirm its credibility.

Coupled with within-case analysis is the cross-case to themes search. These tactics are basically driven from the reality that humans are poor processors of information because they arrive at conclusions based on limited information (Kahneman and Tversky, 1973) and are influenced by the vividness of information (Nisbett and Ross, 1980) or elite respondents (Miles and Huberman, 1984). To overcome this issue, the researcher implemented two different tactics. One tactic used in this study was to select categories, and then to look for within-group similarities and intergroup differences. Another tactic used was to select pairs of cases (high performing and low performing) and then to list the differences and similarities between each pair. These two tactics helped to force the researcher to go beyond initial impressions through the use of diverse and structured lenses on the data. These tactics have helped to improve the chances of accurate and reliable theory with a close fit with the data. They enhanced the probability of capturing novel findings from the data.

## **4.2 Research Philosophy and Paradigm**

Discussion around the philosophical decisions is a critical element to start with, since many decisions on the research strategy can have an influence on the instruments for the data collection and analysis processes. Based on the decisions made, the steps to be followed will yield a robust research design so the outcomes can be followed by others. Thus, different research designs are available and are being used by researchers. These approaches are bound to ontological, epistemological, methodological and axiological positions (Fitzgerald and Van Eijnatten, 1998).

Generally, in the scientific community, the relativist, realist, positivist, interpretivist, qualitative and quantitative as well as some other categories that belong to the 'hard' vs. 'soft' research dichotomies (Fitzgerald and Van Eijnatten, 1998) are actively being discussed, as well as some other categories that belong to the 'hard' vs. 'soft' research dichotomies (Fitzgerald and Van Eijnatten, 1998). Soft and hard paradigms are the two tendencies for thoughts and action. They have had considerable influence on the development of comparable fields (Pollack 2007). A hard paradigm is linked with a positivist epistemology, quantitative techniques and deductive reasoning; it is associated with rigour and objectivity. Studies based on this type of paradigm focus on efficient, expert-led delivery and control (Pollack 2007). The soft paradigm, however, is linked with an interpretive epistemology, qualitative techniques and exploratory and inductive reasoning. It aims more towards contextual relevance instead of objectivity.

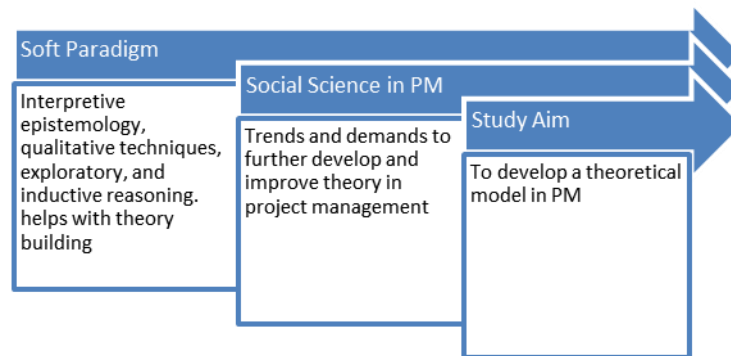
Studies based on this type of paradigm focus on participation, exploration, learning and demonstration in underlying social processes (Pollack 2007).

In the context of project management, the literature review shows more examples indicating that PM is deeply rooted in the hard paradigm type, which can be seen from the significant attitudes and assumptions on the purpose of PM and the role that project managers play. The literature review shows that project management has developed as a functionalist activity, purposeful and aligned with the hard paradigm type. This alignment has tendencies towards objectivity and realist and positivist philosophies together with reductionist techniques. Therefore, the theoretical ground of PM is largely implicit and theoretical ground discussion is rare. On the other hand, the influence of the soft paradigm type on PM is relatively less. However, interest in the soft paradigm in the field of PM is starting to grow. Evidence can be seen from the increasing number of research publications in the social science field.

To achieve the aim of this study and to progress the field, it is important to develop an understanding of the theoretical basis, which will provide opportunities to better understand the assumptions underpinning practice. Therefore, the researcher sees an opportunity to explore the soft paradigm in the context of project management in the public sector. It will emphasize participation, exploration of projects, learning, and demonstrates an interest in social processes (Pollack 2007) that will help building/developing theories for project management. Furthermore, since this research is looking into the influences of intangible resources on project success, the position was in the 'soft' side, taking into consideration that there might be a difference in the perception of each individual's reality. These various perceptions had to be taken into account during the data collection and analysis stages because different descriptions of the project situation might lead to multiple explanations and root causes. Figure 4.1 shows clear alignment between soft paradigm characteristics in helping to build theories, the need to further develop theories in a social science field of PM and the study aim to understand the nature of the relationship between intangible resources and project success in public sector organizations by developing a theoretical model. Also, as was mentioned above, different research designs can be performed and it is important to discuss them and provide explanation about their characteristics. In the following paragraphs approaches such as epistemology, positivism, and qualitative research are the subjects of discussion.



**Figure 4.1: Soft Paradigm, Social Science and Study Aim Alignment**



One of the approaches is “epistemology”. It is a philosophy domain concerned with knowledge scope, referred to as the “theory of knowledge”. It investigates what knowledge is, how it can be gained, and to what extent knowledge pertinent to any given subject or entity can be acquired. Debate in this field is concerned with the philosophical analysis of the nature of knowledge and how it relates to connected truth, beliefs and justifications. On the epistemological level, this research is supposed to take a position as interpretivist objectivist research. The research results would explain a certain phenomenon. Moreover, other researchers may be able to see the phenomenon in a similar way, even though the conclusions and descriptions of individuals may vary. This is because the intangible factors and individual perceptions are never repeatable, such as in a ‘hard’ positivist research design. Even though this approach will apply a reductionist viewpoint, the explanations should allow developing a causal chain that does not require universal truth.

Positivism is considered to be one of the major philosophical schools of thoughts (William and James, 2006). Examination of the literature reveals that the field of project management has been developed as an essentially functionalist activity, purposeful and with tendencies towards realist and positivist philosophies. This is because they focus on reductionist techniques and control and they emphasise on objectivity (Pollack 2007). Therefore, project management as a whole has been linked to positivist philosophies (Bredillet 2010). However, to understand the project management of these case studies in their complexity in particular socio-cultural contexts, the interpretative paradigm was useful in this research (Farquhar 2012). Table 4.1 describes the characteristics of interpretivist research. Highlighted texts in the table are research elements selected for this study.

**Table 4.1: Characteristics of interpretivist research**

(Compiled from Creswell (2007; Gribich ( 2007);

Elements	Description
Understanding	The realities are presumed to be multiple and fluid. Reality exists within mind and is viewed socially embedded. Project Management practices are fluid as they are different according to the routine operations of each case or company.
Subjectivity	This involves interpreting meanings according to their own subjective frame of reference and actions of the actors. Each project case has its own interpretive meanings of Project Management according to their basic project operations.
Subjective	Research encompasses how they have been constructed and researcher's own view. Recognized by the members of culture. The case studies have their Project Management practices limited to their knowledge.
Setting	It involves an in-depth investigation. The subject of research is not removed from what surrounds it in everyday life; its emphasis is on natural settings. Project Management phenomenon was observed with the cases in the public sector in Abu Dhabi, interviews inquired the questions regarding daily project operations and routines within the same research setting.
Holistic	The researcher must look at its parts in terms of its whole and the whole in terms of its parts; in interpreting a phenomenon. Project Management phenomenon is compared between case studies.
Diversity	Different scope and nature to ensure the same low/high project performance group diversity.
Rich insight	The researcher can gain a much fuller understanding of the phenomenon, by exploring in depth. The data were collected through interviews and document analysis.
Adapted from Farquhar (2012, p.20)	

### 4.3 Quantitative and qualitative research paradigms

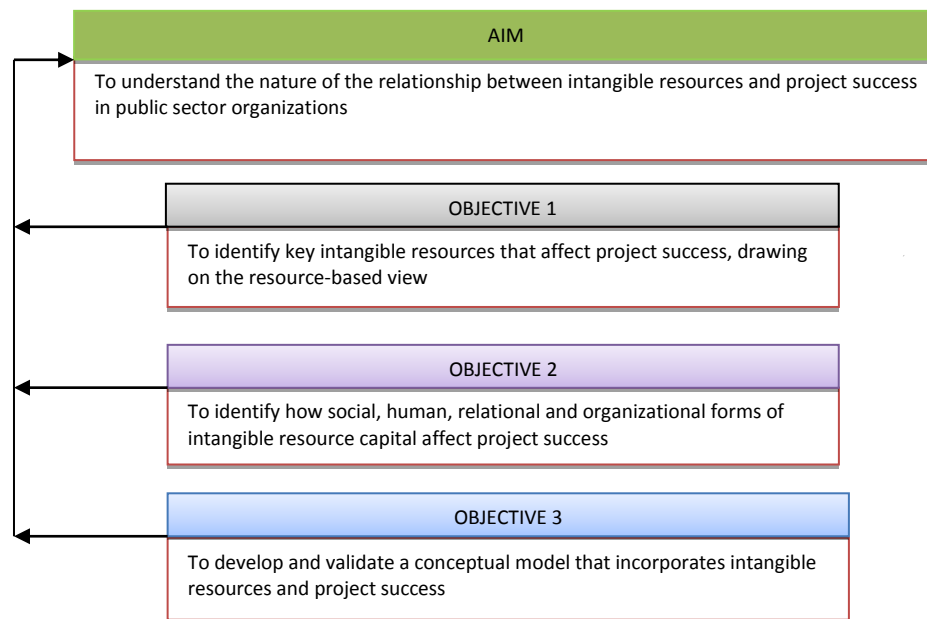
Qualitative and quantitative paradigms are two research paradigms deeply rooted in the process of enquiry. The qualitative paradigms are interpretive approaches (naturalistic, post-positivist or postmodern perspectives or constructivist). The quantitative paradigms are experimental (positivist and the empiricist). Both paradigms differ in their epistemological, ontological, axiological, methodological and rhetorical approaches. They are described in table 4.2. It includes explanation of what assumption each enquiry makes. These assumptions have been developed by Creswell (1994) and they are based on three sources: Firestone (1987), Guba and Lincoln (1988) and McCracken (1988). Highlighted texts in the table are research elements selected for the present study.

**Table 4.2: Assumptions behind quantitative and qualitative paradigms**

Assumption	Questions	Quantitative	Qualitative
Ontological assumption	What is the nature of the reality?	Reality is objective and singular, apart from the researcher.	Reality is subjective and multiple as seen by participants in a study. Project management is individual according to each case study's requirements.
Axiological assumption	What is the role of values?	Unbiased and value free. (Realism)	Biased and value laden. (Constructivism) Research has taken the steps for making the research non-biased.
Rhetorical assumption	What is the language of the research?	Formal. Impersonal voice. Using accepted quantitative words. Based on set definitions.	Informal. Personal voice. Accepted qualitative words Evolving decisions. The data were collected through interviews and document analysis
Methodological assumption	What is the process of the research?	Process of deduction. Cause and effect. Categories are isolated - static design. Before research. Context free. Generalisations leading to understanding, explanations, and prediction. Reliable and accurate through validity and reliability.	Process of induction. Shaping through mutual real-time factors. Categories identified during research process - emerging design. Context-bound. Theories develop for understanding, patterns. Reliable and accurate through verification. Data analysis is inductive, expand or construct theory Findings are holistic and thick.
Source: Adapted from Creswell (1994, p. 5)			

To sum up, qualitative research is based on the interpretative paradigm and assumes the social reality of the subjective experience of people involved in creating and sustaining it (Morgan, 1980). Researchers using qualitative research focus on accurately describing and interpreting the phenomena's meanings (Fryer 1991). Their focus is to investigate "the complexity, authenticity, contextualization, shared subjectivity of the researcher and the researched, and minimization of illusion" (Fryer 1991). As a result, qualitative research is especially effective for gathering culturally specific information on opinions, values, social contexts, and behaviours. It provides in-depth information on the human side that often has contradictory opinions, emotions, behaviours, beliefs and relationships. The next section is the researcher's justification for selecting the qualitative approach for this study in order to achieve the study aim and objectives as illustrated in figure 4.2.

**Figure 4.2: Aim and Objectives**



#### **4.4 Why Qualitative Research? Justification**

Considering the exploratory nature of this study and the points mentioned in the above section, a qualitative approach was selected as an appropriate approach since it would allow the researcher to gain in-depth information/understanding and explanations for aspects related to the intangible resource factors in the context of PM in a new geographical area such as Abu Dhabi. This is because it is particularly suited to collecting data on project team members' perspectives and experiences, especially when sensitive topics, such as the intangible research factors of the study, are being explored. This topic is a sensitive topic as it largely contains human, social and relational aspects. For example, a factor related to social capital was measured by three dimensions (leadership skills, cooperation and trust, and knowledge integration). These three dimensions significantly contribute to knowledge sharing through the mediating role of social capital as found in this research study as well as the previous quantitative study conducted by Cheng and Zhang (2015) in engineering project design teams. Following a qualitative approach assisted to determine how this finding could be amended to account for other cases in this research. Furthermore, a qualitative approach is relevant to this research in project management (a knowledge-based discipline) because it emphasizes intellectual capital and it can identify the circumstances related to creating value. For example, resources may be path-dependent (history matters), involve causal ambiguity (difficult to understand), socially complex and immobile (firm-specific) and therefore a qualitative approach can provide greater opportunity to explore. Furthermore, qualitative

approaches are practical when applying project management to the RBV because interviews assist in elucidating the concept by allowing the gathering of rich information on how project team members view it (Killen et al. 2012). It gives flexibility for the participants interacting in their own language and under their own terms (Baumann 2013). Qualitative approaches can be of great assistance in exploring problematic RBV concepts, such as the case of definitional ailments criticised as effecting research progress (Bontis et al. 2007). This can be done by demonstrating that RBV could be used to define the intangibles of the resources (Kraaijenbrink et al. 2010; Molloy et al. 2011) by “first applying a resource-based view of the firm, defining intangibles as a subset of strategic resources, and then testing current definitions against this framework qualitatively.” Furthermore, by using the qualitative approach, every small piece of evidence, remarks or statements in both formal and informal settings can be included as data to find answers to the research questions. Qualitative research methods helped to contribute to lay the first foundation for some observed phenomena such as contractor team familiarity. It led to generation of the research hypothesis that may be tested through a subsequent research project in a quantitative design.

In light of the above discussion and the available options for the data collection process, the selected methodology was: *A positivist-exploratory qualitative case study approach*. However, it is useful to mention that quantitative methods and research are not superior to each other because the progress of a discipline does not necessarily depend on the proportion of qualitative vs. quantitative research. It actually depends on the quality of the research projects and the results. It does not really matter which one is used so long as the methodological choices are coherent with the research design and have been carefully and rigorously implemented.

#### **4.5 Research Design and Case Study Approach**

Among the different types of method, such as observation, ethnography, experiment, vignette, histories, archival analysis, the case study method was selected. This is because it is a powerful approach when developing a new conceptual model (Yin 2009). A case study may be understood best as a narrative, based on actual events, which creates an opportunity for conversation and problem analysis (Welch et al. 2011). Using cases provided the researcher with substantive strengths when developing a conceptual model:

- Higher possibility of developing a conceptual model because creative insight mostly arises from the juxtaposition of paradoxical or contradictory evidence (Cameron and Quinn, 1988). The use of case studies can better predict what may

work or what may work not (Baumann 2013). In its purist form, a case study is a detailed story that is illustrating a real situation, capturing organizational complexities, allowing an insider look at organizational issues (Cao and Hoffman, 2011). It provides researchers and practitioners with a platform to discuss, to evaluate, and to then develop critical thinking skills which can lead to conclusions and possible solutions for project management process issues (Cao and Hoffman, 2011).

- The generated conceptual model is likely to be testable because constructs have already been measured during the theory-building process (Huberman and Miles, 2002). This would narrow the areas of criticism in the RBV, by utilizing case studies and interviews to collect data on RBV utilization in research and practice (Killen et al. 2012). The data and its analysis could then be based on multiple sources to strengthen the credibility and validity of the findings (Godhania 2015), and subsequently help guide further research studies and practices with a model for achieving competitive advantage. Furthermore, the generated conceptual model is likely to be empirically valid since the building process is connected with evidence and it is very likely that the framework developed would be consistent with empirical observation (Huberman and Miles, 2002).
- Case studies are applicable to human situations and real life, as the conceptual model of this study has more human elements in it, such as the human, relational and social capital intangible factors (Huemann 2010). Project-based public sector departments are typical knowledge-based organizations, and human resources play a significant role in project success. The existence of public sector organizations is based on internal assets that are scarce and difficult to trade; moreover, they establish competitive advantages for an organization. This accords with RBV theorists as they view an organization as a bundle of tangible and intangible resources. Therefore, with the intention of understanding RBV in a much more comprehensive way, case studies are useful approach to follow. Moreover, qualitative data offered the potential to understand complex layers of interactions from the human aspect to project management processes (Huemann 2010). Substantive information about the way humans, organizations and relations are influencing project management processes was derived in this research.

- Case studies are strong for theory building and the development of holistic models with which to explain and understand complex dynamics (Ravenswood 2011). In-depth interviews and case study methodologies for data collection of this study helped to utilize RBV in research and practices (Killen et al. 2012). The collected data can be further analyzed and used for reinforcements of the credibility and validity of the findings that will lead to better conceptual frameworks and practices for competitive advantage.
- Case studies have high exploratory potential, as this research was not purely limited to a specific questionnaire. It can give the researcher the advantage to look beyond the focus of the research and to understand additional phenomena or new contexts which can only be observed if the research design allowed this holistic perspective (Gul 2012).
- To further confirm some of the themes found, part of the process is the iteration back and forth between steps during the data analysis phase, the case study approached offered room for a refinement of theory (Eisenhardt 1989).
- When we do not have clear distinction between the phenomena and context (top management support factor deals with organizational phenomena), choosing a case study approach instead of surveys, archival research, historical analysis and experiments brought more advantages to the research. The reason for this is in presence of 'how' or 'why' questions that are asked about a current set of measures which were hardly controllable (Young and Poon 2013).

**The Case Study Category** – Based on the typology of case studies constructed by Levy (2008), which focuses on the theoretical purposes or research objectives, this research followed the Hypothesis-Generating Case Studies category. This is because this type of case study category is aligned with the study aim and objectives. This research of case studies aims to generalize beyond the data by examining more cases for the purpose of developing more general theoretical propositions, which can then be tested through other methods. Table 4.3 gives an overview of the typology of case studies based on the Levy (2008) study. In this study, the exploratory case study type was adopted in order to help the researcher explore relationships between intangible factors and project outcome, which is the focus of the study.

**Table 4.3 Typology of case studies**

Case Study Type	Description
Idiographic Case Study	Aims to describe, explain, or interpret a particular “case” and which can be either inductive or theory-guided (Lijphart 1975)
Theory-Guided Case Study	Aims to explain and/or interpret a single historical episode rather than to generalize beyond the data (Levy 2001)
Hypothesis-Generating Case Study	Examines one or more cases for the purpose of developing more general theoretical propositions, which can then be tested through other methods (Collier 1999)
Hypothesis Testing	Aims to test hypothesized empirical relationships (Eckstein 1975)
Plausibility Probes	Intermediary step between hypothesis generation and hypothesis testing and which include “illustrative” case studies (Eckstein 1975)

Moreover, explanatory and descriptive case studies would not be of great help as they are geared towards explaining relationships and adding realism and in-depth examples, which are not the focus of this study (Yin 2009). A holistic multiple case design was selected in this study because evidence from multiple cases is more likely to be more compelling, making the overall study regarded as being more robust (Herriott and Firestone, 1983). In addition, it helped to avoid misrepresentation of data and allowed for replication to make original findings more robust. The data collection approach selected for this study is semi-structured interviews and archival analysis. Archival data aided in verifying or supporting information provided where semi-structured interviews were particularly suited for collecting data on individuals’ personal perspectives and experiences (Yin 2009). This method gave potential advantages for the researcher, such as:

- Building positive rapport between the researcher and interviewees which helped in obtaining data on feelings and emotions, as well as helping in obtaining more supporting documents (Godhania 2015).
- Obtaining high validity as interviewees were able to talk about events and issues for the case in detail (Killen et al. 2012). The meanings of an action might be revealed as interviewees could speak for themselves with little direction from the researcher.
- Avoiding pre-judgement: with pre-set questions, the researcher is not pre-judging what information is important and what is not (Bauman 2013).

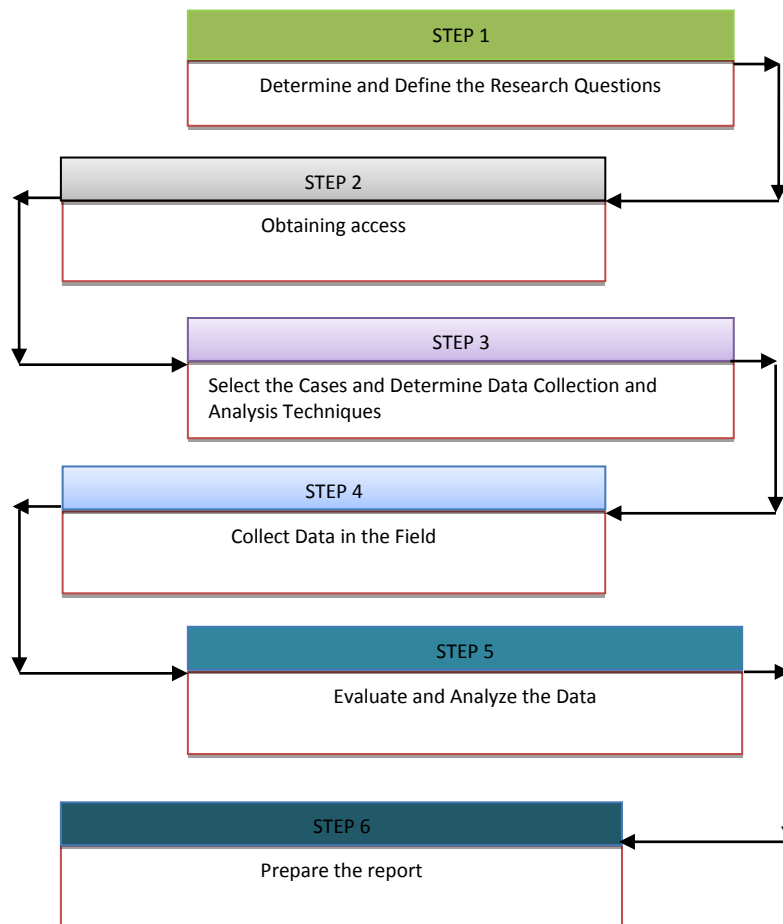
Developing a case study protocol gives a frame of process and it includes the necessary elements for the proper conduct of a research. The following section illustrates a common case study protocol that guides this researcher’s methodology.



## 4.6 The Case Study Protocol

The preparation for the interviews, as one element of the data collection activities, starts with the instrumentation. Data was designed to be collected through semi-structured interviews and relevant project documentation would also be reviewed. Before designing the questionnaire for each case, a case study protocol was developed for use before starting the interview phase. Reading the case study protocol, the researcher could focus on the data collection and other important elements during the interviews. This helped the researcher to maintain the main line of inquiry and to look at other interesting aspects from the project during the interview. Figure 4.3 and the steps below illustrate the case study protocols in greater detail where the following sub-sections provide more elaborations on the steps in order to develop a good quality research design of inducing theory using a case study:

**Figure 4.3: Steps for Case Study Protocols**



### 4.6.1 Determine and Define the Research Questions (Step 1)

In order to achieve the study objective 1, the researcher started with a review of the literature in order to determine what previous studies have concluded. From a detailed literature review

and based on the assumption of the RBV on the internal assets that are difficult to trade and imitate, scarce and appropriate and give a firm its competitive advantage, the intangible resources, rather than the tangible, were the focus of this study. The categorization of human capital, structural capital, social capital, and relational capital forms the intangible resources framework of this research. Therefore, defining and specifying the research questions are crucial in building theory from case studies (Gul 2012). According to Mintzberg (1979), regardless of how small the sample or the interest is, we should always go into organizations with well-defined focus-to collect specific kinds of data systematically. Defining the research question has similar purpose to testing hypothesis in other research (Gul 2012). Without a research focus, it is easy to become overwhelmed by data volume. Such definition of the research questions allowed the researcher in this study to specify the kind of research setting and the data to be gathered. Therefore, to achieve study objective 2, four research questions were determined to guide the entire study and better facilitate analysis, as well as avoid being distracted by interesting but irrelevant digressions:

**Research Question 1:** How do human capital intangible resource factors influence project outcomes in a public sector organization in Abu Dhabi?

**Research Question 2:** How do organizational capital intangible resource factors influence project outcomes in a public sector organization in Abu Dhabi?

**Research Question 3:** How do relational capital intangible resource factors influence project outcomes in a public sector organization in Abu Dhabi?

**Research Question 4:** How do social capital intangible resource factors influence project outcomes in a public sector organization in Abu Dhabi?

#### **4.6.2 Obtaining Access (Step 2)**

As part of the process in identifying how social, human, relational and organizational forms of capital affect the project management success (Study Objective 2), the researcher contacted the top management of the setting (Managing Director, Project Management Department Manager, Human Resource Manager, and Maintenance & Operation Manager), who were open to the idea of the research study and provided the researcher with a supporting letter. The researcher had prepared to collect data by contacting the setting to be studied to gain their cooperation, clarify the purpose of the study, gather key contact information and obtain access to the archive. However, as part of the MPhil study, since pre-test is the only way to evaluate questionnaires in advance if they will cause a problem to the interviewer or the

respondents, a careful pilot test was considered. This consideration is based on the common experience that a small number of conventional interviews will always reveal numerous problems (such as questions that have unwarranted suppositions, missing response categories, and awkward wordings (Presser et al., 2004). According to an expert, "it usually takes no more than 12-25 cases to reveal the major difficulties and weaknesses in a pre-test questionnaire" (Sheatsley, 1983). A pilot survey was conducted with the setting project engineers and project managers. This was in order to empirically test a set of hypotheses developed earlier, samples of 50 closed out projects reports completed between the year 2006 and 2011 from a public company in UAE were considered. Survey questionnaires was addressed to the projects team and managers listed in these projects close out reports. The aim of the survey was to determine how the intangible resources could influence project success in terms of cost, schedule, and quality. The choice of the setting was based on the authors' access to list of projects in this setting and by the total volume of assistance, projects values, and potential participants. The Pilot study included survey questionnaires which have already been validated in previous studies (Jugdev and Mathur, 2006; Scott-Young et al., 2008). Below is a summary of the finding and adjustment to the research method design was made accordingly to overcome the survey questionnaires weaknesses and the opportunities that a qualitative case study approach could provide to the study:

- English idioms should be avoided with a non-English native speakers
- Project Management technical terms should be avoided with fresh/untrained project engineers
- Questionnaires should be short and straight forward
- Some intangible resources factors are confusing terms and should be replaced
- Agreement level responses should be displayed clearly to avoid selection mistakes
- Some questionnaires should be customized based on participants' categories (client, consultant, or contractor).
- Most importantly, the more extensive use of the secondary data source that was available from the researched organization, the marrying of high quality secondary data analysis with more qualitative techniques, presented an opportunity in the context to provide a construction to knowledge through empirical evidence.

Therefore, since the data to be collected and examined included project documents, the researcher requested copies of these documents as well as permission to interview selected individuals. The following steps explain how access was obtained:

**Step 1.** Contact research setting top management for research cooperation, support, and introduction to the key contacts in the project department

**Step 2.** Request access to the project department archives and collect preliminary information about previously completed projects

**Step 3.** Compile a list of previously completed project including project description, initial cost, actual cost, contract start date, contract end date, actual start date, and actual completion date.

**Step 4.** Select ten initial cases that fits the selection criteria presented in table 3.5

**Step 5.** Request the ten cases project document, conduct detailed study of cases document and identify project key contacts.

**Step 6.** Select four cases for the theory development phase and six cases for confirmatory phase

**Step 7.** Arrange meetings and conduct interviews

#### **4.6.3 Select Cases (Step 3)**

To achieve study objective 2, determining the sample size of the study is a prime objective (Merriam and Tisdell, 2015). Collecting and analysing data from case studies and participants is termed a census. However, due to time and money restrictions, it is difficult to collect data through a census. According to Saunders et al. (2009), sampling techniques are used to consider selected elements to collect data from and reduce the amount of data collection from whole population. This will give more time for piloting and designing methods for data collection from a smaller number of cases. Therefore, using sampling may give a higher overall accuracy than a census (Baumann 2013). This is because more time can be spent collecting detailed data from fewer cases. However, it is crucial that the sample size is able to answer the research objectives.

In this study, the aim would be achieved by considering the unit of analysis for this study to be the capital projects in the utility sector in Abu Dhabi. Capital projects executed for the research setting presents a good sample for the utility sectors. This is because capital projects related to sewerage in Abu Dhabi are similar to those executed for the water, electricity and transmission lines, as they follow the same procedures and process since these public companies are in the same authority (Abu Dhabi Water and Electricity Authority - ADWEA). Therefore, the selection of cases in this study was a prime key to building theory (Study

Objective 3). This is because the population is important in defining the entity where research sample is to be taken from (Gul 2012). Furthermore, appropriate population selection helps in defining the limits for generalizing the findings as well as controls extraneous variation (O’Leary 2010). In this study, this selection allowed for the control of environmental variation which reduced extraneous variation as well as clarified the domain of the findings as a utility governmental company operating in Abu Dhabi. However, even though the sampling of cases in a building theory case study research can be considered as a usual practice (Glaser and Strauss, 1967), the cases of this study were chosen for theoretical reasons in order to replicate previous cases, extend emergent theory, and provide examples of polar types. Following Pettigrew’s (1988) recommendation when having a limited number of cases to study, cases were chosen as extreme situations and polar types (higher performing cases and lower performing cases). According to Cohen et al. (2000), a purposive sampling is required when a small-scale multiple case researches is undertaken. Furthermore, Lincoln and Guba (1985) stated that the full scope of required issues to be explored will be enabled by using purposive sampling. This study employed a non-probability sampling strategy (Cohen et al. 2000, p. 99). Table 4.4 explains the sampling techniques available.

**Table 4.4: Sample Techniques**

Sampling							
Probability					Non-probability		
Simple	Systemic	Stratified	Cluster	Quota	Purposive	Volunteer	Haphazard
Simple random	Systemic random	Stratified random	(random) Cluster	Quota	1) Extreme case purposive 2) Heterogeneous purposive 3) Homogeneous purposive 4) Critical case purposive 5) Typical case purposive 6) Theoretical purposive	1) Snow-ball 2) Self-selective	Convenience
Multi-stage							
Often associated with surveys and experiment research strategies.					Case selection, no generalisation on statistical grounds.		
Adapted from Saunders et al. (2012, p. 261)							

The researcher adopted a two-stage screening procedure. The first stage consisted of collecting relevant quantitative data about the entire pool from the archiving files. Cases were

then selected on the basis of cost and schedule index with a resulting value closer to one, which indicates high performance, and much less than one, which represents low performance. These are measures of project efficiency given by the Project Management Institute (2002) to gauge the progress and efficiency of a project. Then, ten perceived high and low performing capital projects were studied, having been identified based on project closure reports. This heterogeneous sampling was to ensure data were collected from a diverse and broad range and to ensure the use of good cases to represent the capital projects within the setting. The number of cases is critical and has to be discussed in the context of generalizability. Cases contain public sector capital projects that are, according to the cost and schedule index, considered to be either low or high performing projects. The status of these projects was already closed when the interviews were performed. The number of 10 projects in total seems to provide a good opportunity to find answers for the research questions. However, it is critical to choose how the case study results are treated. For a suitable number of cases, the question is when data saturation can be reached. As defined by Eisenhardt (1989) and Simister (1994), it can be reached if no more new influencing factors and no more data is being revealed, even if more cases are added to the research. Ten cases seem to be a good amount to use but whether the required data saturation was achieved or not is discussed during the study reflection chapter. When working with qualitative data, it is essential to differentiate between the statistical relevance of a quantitative study, in which a larger sample increases the reliability of a sample, and the qualitative environment, which does not necessarily require a large number of samples to be convincing. A good quality research design has to fulfil the tests for good qualitative research. The ten cases allowed the use of replication logic for the findings. From these selected ten cases, four cases were carefully selected to develop the model and then use the rest of the six cases to validate it. This is because with less than four cases, it is hard to generate a theory with much complexity. Furthermore, these four cases were selected because they represent extreme situations and polar types that allowed the researcher to observe the unique themes of each case to emerge prior to generalizing the themes across cases. Furthermore, access, immediate availability of these key contacts, and richness of progress meeting reports of these four cases allowed for developing a rich familiarity with each case which helped in accelerating the cross-case comparison phase. Appendix 1 includes quantitative data about the entire pool of projects and the ten selected cases, along with the justification for selection. Table 4.6 is a summary of the case selection criteria adopted by the researcher.

**Table 4.5: Summary of the Case Selection Criteria**

Criteria	Measures
Index	Cost and schedule index fit with low/high performance project group type.
Scope	Similar scope and nature to allow cross-group checking for the high/low project performance group.
Contact	Existing contact with organization and key contacts.
Supporting Data	Availability and access approval for project archive files.
Interviewees	Availability of project managers of client, consultant and contractor for interviews.
Diversity	Different scope and nature to ensure the same low/high project performance group diversity.

The selection of participants is also crucial to fulfil the research aim. Participants are selected to provide perspective to clarify and elucidate aspects of the investigation; they are also selected based on the information that a researcher seeks (Polkinghorne 2005). The participant numbers needed for quantitative or qualitative research can be confusing. However, since the objective of the qualitative researcher is generally to understand, the number of participants could be lower than those required for quantitative research without necessarily having a negative impact on the research (Creswell 2007). In this study, interviews were conducted with key informants of each case study (the project managers of the client, consultants and contractors). These participants were needed to ensure that the areas are covered in the interviews. They were the decision-making participants of project operations. A tentative list of key informants of each case to interview was prepared before data collection. Key informants were handpicked from the progress meeting reports whose contact details were included. Averaging three people per case study, in total 30 participants were picked according to their project role as project managers. Interviews in the study lasted, on average, one hour. However, the actual duration for the interviews lasted for an overall average of 25 min (approximately) excluding greetings, introductions, clarifications, and interruption. The following section explains in details about the semi-structure interviews and document analysis employed.

#### **4.6.4 Collect Data in the Field (Step 4)**

In data collection processes usually researchers go through secondary and primary data collection. Secondary data are available data being collected for some other purposes while primary data are data collected from original sources that were not collected previously or used by some other research, data that researcher collects directly for the research project (Saunders 2011). The process of data collection should generally balance features and assets of

the case study research and ensuring the ability of revising a research problem or question in depth and in context. Method of data collection such as case study can in fact engage numerous data collection actions for within-case and cross-case evaluation, as case study approach is understood as being a research strategy that contains qualitative data (Dooley 2002).

Table 4.7 presents qualitative and quantitative data sources for case study; highlighted text presents the factors employed in the research.

**Table 4.7: Qualitative and quantitative data sources for case study research**

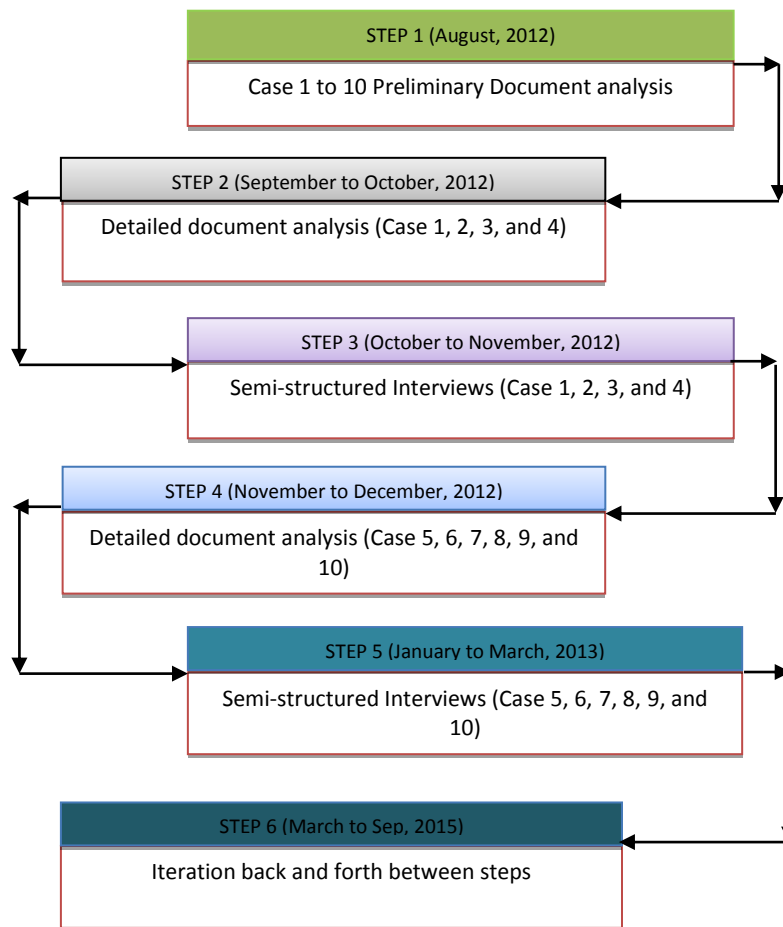
Data	Quantitative data sources	Qualitative data sources
Primary	Surveys, experiments, observations	Interviews (face-to-face, online, phone) focus groups, participant observations, diaries. This study used face-to face interviews, and Phone Interviews.
Secondary	Annual reports, Final Acceptance Certificate (FAC), Provisional Acceptance Certificate (PAC), statistics, graphs	Internal reports, minutes of meetings, government data, consultancy reports, contractor reports. Project specifications, design catalogues and websites were used for this research.
Adapted from Farquhar (2012, p. 68)		

In interviews, we can have Standardised interviews and non-standardized interviews (Saunders et al. 2012). Standardised interviews contain interviewer-administered questionnaires (mostly quantitative surveys) and non-standardised interviews contain one-to-one interviews (face-to-face interviews, telephone interviews, internet- and intranet-mediated (electronic) interviews (Godhania 2015). We can also have one-to-many interviews. These kinds of interviews contain face-to-face group or focus group interviews and internet- and intranet-mediated (electronic) focus groups.

As part of identifying how social, human, relational and organizational forms of capital affect the project management success (Study Objective 2), according to Yin (1994) and Miles and Huberman (1994), data collected from multiple sources can support new models and theories. Combining multiple data collection methods is typical practice researchers follow when building theories (Baumann 2013). In this study, archival sources and semi-structured interviews were used. Figure 4.4 and the steps below illustrate the data collection time line for the present study:



**Figure 4.4: Data Collection Time Line**



**Document analysis** – Document analysis and observation are commonly used qualitative research methods. This is because by using only interviews, results can be overly empiricist in analysis. This brought criticism on reliance on such methods (Stark and Torrance, 2005). To overcome this criticism, document analysis was conducted in this study to support the evidence of the interviews (Godhania 2015). Generally, documents can include private and public documents (Creswell 2008). The present study employed minutes of meetings reports as sources of documents, and project specifications. Prior to an interview, the researcher reviewed the archiving file of each case to identify critical incidents in order to ask interviewees about them. From those incidents, the researcher could infer the role of particular intangible resources. As part of achieving study objective 2, reviewing these documents helped to identify critical incidents in order to ask interviewees about them (Godhania 2015). However, observation was not employed in this study even though it has the potential to be enlightening and rewarding to pursue and adding more to the richness of the research data. This is especially important when the research questions and objectives are

related with what people do, the best way to discover it is to observe them doing it. However, due to the fact that case selection was based on cost and schedule index (already closed projects), it was not possible to employ observations (Polkinghorne 2005).

**Semi-structured interviews** – This is a technique in qualitative research that helps gathering valid and reliable data for the research objectives and questions (Baumann 2013; Godhania 2015). The main understanding of the interviews is that it represents a conversation between two or more people, where one party is the interviewer who is required to build a rapport, through asking clear, brief and reasonable questions. The other party is the interviewee, a person who is willing to respond, and to listen attentively (Saunders et al. 2012). We can identify a number of positive aspects of interviews. Initial aspect is flexibility for both parties, and it is delivered in interviews. Another aspect is a higher response rate in interviews than in some qualitative research approaches, as people prefer to respond verbally rather than in writing. Third, interviews can play a very important role when a small number of compound topics are incorporated and extensive data is required in the study. Fourth, probing can be used to produce more comprehensive replies from interviewees.

When the data such as behaviours, thoughts, intentions and feelings are needed for research, then interview is a proper technique in the qualitative research method. The main assumption is that the standpoint of others could be made unambiguous, expressive and recognizable (Patton, 2002).

The main aim of the study can be achieved through active commitment of the interviewer and the interviewee towards appropriate issues, practices and subjects during the interview. Moreover, another key distinctive feature of interviews is the interviewing style. It should be fluid, flexible and conversational (Mason 2002; Godhania 2015). Dynamic engagement in in-depth interviews is useful and may expose the fact about the data being found when questioning about someone's upfront understanding or belief on a specific issue, preventing short responses (Saunders et al. 2012).

When we talk about semi-structured interviews then the interview guide should be followed. When a semi-structured interview guide is in process of preparation, there are some basic elements to be followed, as compiled by (Farquhar 2012; Bryman 2015; Easterby-Smith et al. 2008):

- Researcher should be sure that the questions that will be asked are related to the research objectives, without navigating respondents and making it too obvious.

- A situation where the researcher is reliable due to obeying to the ethical research principles should be created. Also, the researcher's post-interview behaviour such as being respectful and discrete to informants will also contribute to the interviews.
- The questions should be asked logically, making a specific direction in the interview guide. Return to an answer that needs further attention by allowing space for probing is also essential.
- Familiarity of the language used in an interview for participants is also important; some supplementary description can be requested for any unknown terms used by participants. Interviews should be arranged on neutral ground, as project managers are busy people and interviews might be interrupted, and their offices may be somewhat unapproachable. Pilot interviews should also be conducted before gaining site access from the project manager for the participant reflection.
- After completing each interview, capturing the key components by noting down some instant thoughts. These thoughts such as preliminary means of analysis are known as an aide-mémoire. Related notes should be taken at each interview so that it could be analyzed well ahead.

Telephones can also be used for interviews or using any other means such as Skype, chat rooms, and face-to-face (Godhania 2015). The researcher should create a situation and atmosphere where the informants will be encouraged to talk about the topic of the research. The researcher should request opportunity to keep the 'conversation' recorded. Also, research participants should be respected for ethical research and data collection in the interviews (Easterby-Smith et al. 2008).

As part of achieving study objective 2, the researcher adopted the approach of interviewing the project managers of the client, consultant and contractor besides scrutiny of progress meeting reports. The reason is the same as in hypothesis-testing research where the multiple data collection methods gave stronger substantiation of constructs and hypotheses. One of the objectives was also to get access to more project documents, such as project plans, project status reports, issues and events encountered throughout the project life cycle. Interview statements were used against evidence from the project documentation, such as the progress meeting reports. The semi-structured interviews were also used as the entrance point to the cases in order to gain a good understanding of the project(s) and to request additional comments and documents from the interviewee to facilitate the analysis process.

The researcher arranged to visit the archiving system and to take copies of the project closure reports and any other useful documents describing the projects and outlines of the project members. Secondly, the researcher contacted the identified individuals in order to schedule individual interview times. During the interviews, an alternative to taking notes was to use a laptop to document the answers during the interview session; however, this option was discarded for some meetings as typing on a laptop during the interview might lead to scepticism. Additionally, a laptop between the interviewer and the interviewee might bring the interviewee to the impression that other notes and confidential comments could be documented by the researcher. The process of using handwritten information created more transparency for most of the cases since the participants could see what is documented on the interview sheets. Few of the interviews ( in case 1 and 2) were audio recorded to help the data collection process. The recording allowed the researcher to listen to answers after the interview was completed. Audio recording is, on the one hand, a critical instrument as this might again distract the interviewee and create an atmosphere of mistrust; on the other hand, audio recordings are an important instrument to ensure good data analysis. Asking questions and making notes in parallel could increase the risk of misunderstandings during the data collection process. In these two interviews, audio recordings provided the chance to double check what was exactly said by the interviewees. However, the rest of the interviews were recorded in written notes. This is because the audio recording option was discarded for most of the meetings as audio recording during the interview might have led to scepticism and could have caused inconvenience affecting the data gathering. The interviewees and the management were asked for permission for audio recordings.

Although the interviews were open-ended, they were structured around the research questions defined at the start of the case study. Data were entered into the database and then fully transcribed. The transcripts of the interviews were translated by the bi-lingual researcher and the data were analysed. Prior to an interview, the researcher would review the archiving file of the case to identify critical incidents in order to ask interviewees about them. From those incidents, the researcher could infer the role of particular intangible resources. For example, the researcher asked questions, such as what was the influence of this issue found in the progress meeting on the project outcome? Why was this issue stated in the progress report? How did team experience contribute to project success/failure? How did senior management influence project outcome? How planning capability influenced project

outcome? Furthermore, overlapping data collection with data analysis in this study not only provided the researcher with a head start in analysis but, more crucially, allowed the researcher to benefit from flexible data collection. Indeed, a prime feature of building theory is the flexibility to make adjustments to the process during the data collection phase. These adjustments were the addition of questions to an interview protocol and to probe particular themes which emerged. Probes are used to deepen the responses (Patton 2002) by giving supplementary questions to cover more details in that area (Gillham 2005). These alterations allowed the researcher to understand each case individually and in much more depth. The goal was not only to generate summary statistics of observations but also to take advantage by altering data collection in order to better ground the theory and generate new theoretical insight. However, this flexibility was a controlled opportunism where the researcher took advantage of the emergence of new themes and the uniqueness of a specific case in order to improve resultant theory. The applied questionnaires were split into three main sections (generic, case-specific, and themes confirmatory questions). For the generic, PM based factors that fits the assumption of the RBV (being valuable, rare, inimitable, and non-substitutable) were obtained from a broad literature review (Aaker 1989; Hall 1992; Mir and Pinnington, 2014; Teece 2000; Scott-Young et al.2008; Zigan et al. 2009). These factors are human related (ex. project leadership, project team experience, planning capability, problem solving ability, team structure, communication, and team potency), organization related (ex. internal control, management support, culture, and organization motivation), relation and social related (ex. relationship between entities, and connection between project team members). Table 4.8 shows these individual components of intangible resources selected to assist in designing the semi-structure questions for the generic type and shows the goals for each question, the purpose and the areas examined.

**Table 4.8: Interview Semi-structured Open-ended Questions**

Type	Question	Area Examined	Purpose	Cases
1 <sup>st</sup> Set (Generic)	How/why human factors had an influence on project success?	Human Capital IR	Identify and analyse human capital intangible resources.	Case 1, 2, 3, 4
	How/why organizational factors had an influence on project success?	Organizational Capital IR	Identify and analyse organization capital intangible resources.	
	How/why relational factors had an influence on project success?	Relational Capital IR	Identify and analyse relational capital intangible resources.	
	How/why social factors had an influence on project success?	Social Capital IR	Identify and analyse social capital intangible resources.	
2 <sup>nd</sup> Set (Case Specific)	How/why this issue found in progress meeting report had an influence on the project success/outcome.	Human, Organizational, Relational and Social Capital IR	Identify and analyse Human, Organizational, Relational and Social Capital Intangible Resources	Case 1, 2, 3, 4, 5, 6, 6, 7, 8, 9, and 10
3 <sup>rd</sup> Set (Themes Confirmatory)	How theme 1 had an influence on the project success/outcome.?	Theme 1	Sharpening construct definition, validity, measurability, confirming, extending, and sharpening theory	Case 5, 6, 7, 8, 9, and 10
	How theme 2 had an influence on the project success/outcome.?	Theme 2		
	How theme 3 had an influence on the project success/outcome.?	Theme 3		
	How theme 4 had an influence on the project success/outcome.?	Theme 4		
	How theme 5 had an influence on the project success/outcome.?	Theme 5		
	How theme 6 had an influence on the project success/outcome.?	Theme 6		
	How theme 7 had an influence on the project success/outcome.?	Theme 7		
	How theme 8 had an influence on the project success/outcome.?	Theme 8		
	How theme 9 had an influence on the project success/outcome.?	Theme 9		
	How theme 10 had an influence on the project success/outcome.?	Theme 10		
	How theme 11 had an influence on the project success/outcome.?	Theme 11		

#### **4.6.5 Evaluate and Analyse the Data (Step 5)**

As part of identifying how social, human, relational and organizational forms of capital affect the project management success (Study Objective 2), within-case analysis and cross-case analysis of data were selected as the analysis techniques. The result were further compared with literature and confirmed by the confirmatory cases to enhance validity (Study Objective 3).

**Within-Case Analysis** – Data analysis is the least codified part of the process and most difficult process. This is because it is not easy to follow how to get from a huge number of note pages to the final conclusions (Pettigrew 1988). Therefore, as part of achieving study objective 2, the researcher used the within-case analysis technique which typically involves detailed case study write-ups for each case (O’Leary 2010). These write-ups were pure descriptions and central to the generation of insight information (Gersick 1988; Pettigrew 1988). These write-ups helped the researcher to cope early with the enormous volume of data. The idea was to be familiar with each case as a stand-alone unit. Additionally, this technique allowed the researcher to observe the unique themes of each case to emerge prior to generalizing the themes across cases. Moreover, it gave the researcher a rich familiarity with each case which helped in accelerating the cross-case comparison phase (Baumann 2013). The researcher studied each interview response data and project archive documentation as a separate case to identify unique themes within the data for that single project (case). To put data in an easy preliminary manipulation form, the researcher formed a matrix and placed the evidence within each category. This helped in tabulating the frequency of events.

Qualitative data usually produces large amounts of data, which can accumulate into several thousand words of results; therefore, as a first step, data reduction was done before compiling the data into codes (O’Leary 2010). This coding allowed the researcher to analyse the data more easily than analysing rich text data in which multiple statements are embedded in a large section of text. The process for data reduction is a part of the analysis and should not be seen as independent (O’Leary 2010). After reducing the qualitative data, it is critical not to run into data quantification because qualitative analysis is not intended to convince the reader by numbers or codes but to give a holistic perspective concerning the observed phenomenon.

The data obtained from this study required manual data coding, which reduced the amount of data and allowed for identification of main themes when comparing the codes from interviews and other data, such as data obtained from progress meeting reports. This data also required coding to find similarities and differences and to increase the internal validity of the data

analysis. By applying the codes, the data were divided into smaller portions that could then be assigned to a relevant category (Miles and Huberman, 1994; Yin 2009; Silverman 2010). The coding of data was conducted multiple times and the data transcripts were then reviewed again. This approach of looking at the data with different perspectives helped to increase the reliability of the findings (Baumann 2013).

According to Miles and Huberman (1994), the step following reducing the data is to perform the data display. The data display is simply the gathering of organized and compressed information in a contextual framework. Despite the fact that the richness of data is lost when putting results into a framework or theoretical model, the data display is still an essential element of drawing conclusions that can be tested in future by other researchers (Welch et al. 2011). The transcript tables included at appendix 2 include interview transcripts with the appropriate codes. The coding helped to identify the basis for development of the first themes for further analysis within the same case.

**Cross-Case Analysis** – Coupled with within-case analysis is the cross-case for patterns search. These tactics are basically driven from the reality that humans are poor processors of information because they arrive at conclusions based on limited information (Kahneman and Tversky, 1973) and are influenced by the vividness of information (Nisbett and Ross, 1980) or elite respondents (Miles and Huberman, 1984). Humans tend to ignore basic statistics (Kahneman and Tversky, 1973), or drop disconfirming data (Nisbett and Ross, 1980). This may result in reaching false or premature conclusions due to processing information in a biased way. Therefore, it is important to counteract these tendencies by looking at the evidence in divergent ways (Baumann 2013). To overcome this issue and achieve study objective 2, the researcher implemented two different tactics. One tactic used in this study was to select categories, and then to look for within-group similarities and intergroup differences (Baumann 2013). The second tactic used was to select pairs of cases (high performing and low performing) and then to list the differences and similarities between each pair. This tactic forced the researcher to find subtle differences and similarities between cases. Looking for similarities in seemingly similar cases can break simplistic frames and looking for differences can also lead to more sophisticated understanding (Baumann 2013). As a result, new concepts emerged that the researcher did not anticipate. These two tactics helped to force the researcher to go beyond initial impressions through the use of diverse and structured lenses on the data. These tactics have helped to improve the chances of accurate and reliable theory



with a close fit with the data. They enhanced the probability to capture the novel findings existed in the data.

**Literature Comparison** – Since this study rested on a limited number of cases, tying literature with the emergent theory in this chapter has enhanced the theoretical level of theory building, internal validity, and generalizability. Eisenhardt (1989) highlighted that literature comparison is essential because the findings normally depend on a limited number of cases and it is necessary to compare the results in the light of existing theory, as illustrated in chapter 6. As part of achieving study objective 3, this process considered a broad range of literature. This includes asking what is it similar to, does it contradict with it, and what is the reason. There are two crucial reasons for examining literature conflicting with the emergent theory (Baumann 2013). One reason was the fact that if conflicting findings were ignored by the researcher, confidence in the findings would have been reduced. For example, readers may conclude that the results of the study are incorrect and therefore internal validity is challenged. Similarly, if readers assume that the results are correct, generalizability is challenged as the study results will be seen as idiosyncratic to the study-specific cases. The second reason was the opportunity that could be gained from conflicting literature. The juxtaposition of conflicts would force the researcher to be more creative so the result of the study could be deeper insight into the conflicting literature and the emergent theory. This would also sharpen the generalizability limits. Literature discussing similar findings was also crucial. This is because similar findings tie together underlying similarities in phenomena usually not associated with one another. The result could be a theory with higher conceptual level, wider generalizability, and stronger internal validity.

**Confirmatory Cases** – To achieve study objective 3, this phase helped to assess how well the evidence derived from the study fits with case study data. The principal focus here was to constantly compare theory and data to assess the extent to which theory might fit the data. This is because a close fit between theory and data is crucial to build a sound theory. It gave the researcher the opportunity to see new insights from the data and come up with an empirically valid theory. This process included two steps. One step was the sharpening of constructs and the other step was verifying that the emergent relationships between constructs fit perfectly with each case evidence. From the within-case analysis coupled with various cross-case analysis tentative relationships between variables started to emerge. The next step would be to compare the emergent frame with the evidence from each case

systematically. This step helped in assessing how well or poorly evidence fits with cases data. The idea here was to make the researcher constantly compare theory and data-iterating for the aim of improving project success by developing a theory that likely fits the data. One step implemented in this study was to verify that the emergent themes and relationships agree or disagree with each case's evidence. For example, some relationships or themes were confirmed by the case evidence, while some were disconfirmed, revised, or thrown away for insufficient evidence in this study, where they may be examined in future researched. This verification process was similar to that in traditional hypothesis testing research. The main difference is that each theme was examined for each case, not for the aggregate cases as in the case of this research work. Thus, the logic was replication of treating a series of cases as a series of experiments (Yin 1984). Each case is treated as an experiment, and multiple cases are treated as multiple experiments. Therefore, in replication logic, cases confirming emergent relationships enhanced confidence in the validity where cases disconfirming the relationships provided an opportunity for the researcher to extend and refine the theory. Moreover, these qualitative data were useful for understanding why not or why emergent relationships existed. This is because when there is enough support for a relationship, the qualitative data usually provide enough understanding of the dynamics underlying the relationship which is important for the internal validity.

**Development of a Theoretical Framework** – To achieve study objective 3, this phase presented a theoretical framework that links the four categories of intangible resources to project success. According to Whetten (2002), a theoretical framework is a social phenomenon representation, where to explain its behaviour, in terms of processes and general characteristics and the relationships between them. Therefore, the framework of this study provides explanation on how each category of intangible resources is framed. As formulated in research objective 3, the purpose of this framework is to display the research results in a digestible form to project practitioners and to share it with the research community (Jugdev et al. 2013). As a result, internal validity was increased when linking the theory with the developed framework (O'Leary 2010). The theme identified during the current study and the numerous interviews cited come together to address the literature gap and add more clarification to our understanding.

This phase also presents the framework's theoretical, empirical and practical fields key contributions. The key contribution of the framework section discusses possible future work

from the perspective of a theorist. The framework also explains areas where further enhancement on the model can be made.

#### **4.6.6 Preparing the Report (Step 6)**

The potential audiences to which the study report was addressed were the setting's top management and interviewees, as well as the PhD dissertation committee. Since each audience had different needs, the researcher orientated the report for each audience's needs. For example, for the thesis committee, mastery of methodology and the theoretical issues, along with an indication of the care with which the research was conducted is considered to be an important aspect, as well as the relationship among the case study, its findings and previous theory or research. For the setting and interviewees, the descriptive elements in portraying some real-life situations, as well as the implications for action, are likely to be more important to them.

#### **4.7 Research Validity, Creditability and Quality**

Reliability and validity are important in the qualitative study. Several terminologies are used in determining the rigour of qualitative studies (Guba and Lincoln, 1989; Lincoln and Guba, 1985, 1989). The concept of trustworthiness introduced by Lincoln and Guba (1985), which refers to under-investigation of the existing phenomenon, encompassing whether the results are reliable considerations. When the results reproduce as faithfully as possible the meanings as described by participants, it means trustworthiness (Lincoln and Guba, 1985) can be proven. The progress in explanations and theoretic interpretations should fit in closely to the observed situations, so that the theory is functional by those in the situations studied and understandable, and is "open to comment and verifications by them" (Turner 1981, p. 227) by the qualitative method adopted in this study. Following this discussion, Oliver, Serovich and Mason (2005) stated that participant reflection can be invaluable to creating trustworthy data.

Trustworthiness of mechanisms and their accurateness are referred to in terms of the validity of the research for data and findings. If the instrumentation is valid then the data collected are valid, as the validity of data is occupied with the validity of instruments (Ryan and Bernard, 2000). Coolican (1999) also claimed that the validity of research depends on the data collection instruments used in it. The same researcher also announced four methods of research validity testing. Those methods are criterion validity, content validity, construct validity and face validity. Construct validity has been selected for this research to ensure the validation of data collection instruments. The questions of the designed research interviews were able to match with the objectives of the researcher.

However, Levitas and Ndofor (2006, p. 139) on the issue of generalizability and its impact on the advancement of RBV initiated the question of construct validity in the case of RBV. They argued that the emphasis on proving external validity may decrease the value of experiments and may “impair the process of scientific discovery.” They also claimed that “advances in knowledge and science are most likely achieved not through confirmation and/or replication of one study's findings by subsequent studies, but through refutation of pre-existing theory by more advanced theory.” The main reason why PM scientific research is not improved is the “generalizability of empirical findings across all types of firms and industries is dependent on identifying in advance all involved background variables.” The determinations employed in confirming generalizability would involve scholars in a complex assignment looking for background variables. This assignment would in the end decelerate scientific progress. Lucas (2003, p.242) says that “rejection of a theory based solely on an examination of empirical association across contexts is not very helpful because one cannot easily determine whether the failure is due to inadequate measures, a miss-specified theory, or both.” The researcher of the present study is in agreement with this view because it is not easy to identify which factors contributed to a greater performance of a successful organization. The decision makers in successful companies may be in a position that they do not know from where their competitive advantage is coming from. Researchers can also be in the same position since they can hardly know better than decision makers in companies what a source of the company's competitive advantage is. Thus, they may have difficulties to identify the resources essential to the competitive advantage. Because of this ambiguity, researchers are in the unenviable position to operationalise key constructs. Therefore, it is important for the researchers to primarily work on the key constructs and confirm their validity, before concentrating on generalizability (Levitas and Ndofor, 2006).

#### **4.7.1 Creswell's approach for qualitative research's validity**

Different methodological approach for research validity has been introduced by Creswell and Garrett (2008), who claimed that by using numerous necessities the research validity can be realized. Multiple sources represents one of the necessities and this was used in order to bring multiple sources and different participants that appeals upon various perspectives to decrease systematic bias, to improve trustworthiness and decrease the possibility of misinterpretations (Stake 2005).

Another necessity for determination of the accuracy of the findings is using member checking. This research requirement was fulfilled by the supervision of two supervisors from

Bournemouth University who checked the research findings. They ensured that the process is heading in the right direction by matching the findings with the research objectives.

Thick and rich description to deliver the findings represents the third requirement. The study used cross-case synthesis to meet this requirement.

#### **4.7.2 Reliability in qualitative research**

Reliability in research means that if the research is repeated, researchers would arrive at the same insights (Remenyi et al., 1998), or the method used to collect data can produce similar results each time it is used (Coolican 1999). Reliability is an assessment of whether the evidence is stable and consistent from a broader perspective. It also refers to the predictability, dependability, stability, consistency and accuracy of research (Burns 2000).

There are two main types of reliability: internal and external, as highlighted by Coolican (2009). Consistency and stability of the tests involved in research that is conducted on several occasions (longitudinally) are concerned with external reliability. The data collection instrument would produce similar results if administered to the same respondents and if the research is conducted on several occasions. For this research, as it was not highlighted in the research objective, this type of reliability does not apply.

Internal reliability is concerned with the stability and consistency of the data collection instrument used in the study. The researcher seeks to determine whether the data collection instrument is consistent within itself through checking that participants respond to each question in the same way. The interview questions were designed to help achieve the research objectives in this research. Each question was explained by the researcher to the participants in order to ensure that questions are answered in a similar way (Godhania 2015).

#### **4.7.3 Generalisation in qualitative research**

Although the usual aim of case study research is generalization, the researcher should capture cases in their uniqueness as well (Hammersley and Gromm, 2000). The present research does not state to be generalizable, as this research is qualitative. Nevertheless results of this study may become manageable, with the aim for authenticity and credibility. From the details that are provided in these case studies, those who will read the study should be able to conclude if the results can be useful to other contexts (Curtin and Fossey, 2007).

As many researchers have discussed previously, a study may have different types of generalisation when we have a case study approach. Formerly established theory is used as a background against which to compare case study results, and as Yin (2009) stated the mode of

generalisation is analytic. Yin (2009) also mentioned that the role of the researcher is to generalise to the theory and then expand. Anything can happen, but if we are lacking with any measure of its probability (Bassey 2001) it will result in fuzzy generalisation, which represents the kind of forecast arising from the researcher empirical question.

In the present study, the researcher is generalising from one industry's cases to underlying theory, not to a larger universe with multiple case studies. The selection of the cases was not made on representative grounds, but conceptual grounds (Miles and Huberman, 1994). Each case was carefully selected from the public sector, so that contrasting results are not predicted but for predictable reasons (theoretical replication). Stake (2005) suggests 'naturalistic' generalisation, i.e., context-specific or empirically-grounded generalisation are appropriate for case studies, as in this research. The thick description provided in the case studies provides the reader with vicarious experience of being there (Baumann 2013).

#### **4.7.4 Dependability in qualitative research**

According to Lincoln and Guba (1995), in order to defend the dependability of a research, it involves seeking factors such as design induced change and instability. Suggestions made by Shenton (2004) for demonstrating the dependability of research were followed:

- Description of what was planned and what was executed from a strategic level (research design and implementation).
- Addressing what was done in the field (operational detail of data collection).
- Evaluation of the effectiveness of the process of inquiry (reflective appraisal of the research).

#### **4.7.5 Confirmability in qualitative research**

Theoretical inclinations or personal values with interpretivist approach to persuade the reader is argued in terms of confirmability (Bryman 2001). In this study, interpretation of the data and discussion of the ideas were closely supervised by the two supervisors who audited the research.

#### **4.7.6 Yin's case study test applied in the research**

The construct, internal, and external validity and reliability tests of Yin's were applied and aligned to this research. The four tests of Yin are presented in table 3.9.

**Table 4.9: Yin's case study tests**

Data	Quantitative data sources	Qualitative data sources
Construct Validity	<ul style="list-style-type: none"> <li>Evidence of multiple source to be used (semi-structured interviews, interviews with the three project managers and document analysis with case studies)</li> <li>Evidence chain to be established</li> <li>Case study report draft to be made for key informants (report drafted for each case)</li> </ul>	Data collection stage Composition stage
Internal Validity	<ul style="list-style-type: none"> <li>Pattern matching to be done (pattern or themes are matched)</li> <li>Building explanations (explanations are built for the model)</li> <li>Rival explanation to be addressed (contrast views on the themes are discussed in the cross-case analysis)</li> </ul>	Analysing data stage
External Validity	<ul style="list-style-type: none"> <li>Theory to be used in single case studies</li> <li>Replication logic to be used in multiple-case studies (replicating themes are used in case studies)</li> </ul>	Research design stage
Reliability	<ul style="list-style-type: none"> <li>Protocol of case study to be used (same protocol was used for the case studies)</li> <li>Data base of case study to be developed. (database for each case is presented further in analysis chapter)</li> </ul>	Data collection stage
Adopted from Yin (2009)		

#### 4.7.8 Biases in the qualitative research

One of the main concerns of the qualitative research is biases as researcher beliefs and assumptions are intruding into the analysis (Strauss and Corbin, 1998). Biases are a consistent error present in these data whether data are recorded on the same individual or different individuals or at different times.

Research can be biased in the forms of interviewer, interviewee, and questions. In this study, the researcher managed to avoid interviewee bias by disregarding biased answers from the participants (excluding answers that the researcher needed to have on the participants' personal opinions) (Godhania 2015).

Interview questions were asked and designed in a way that did not imply any viewpoint to the interviewees. This helped to avoid any researcher bias. It enabled respondents to answer the questions with no influence.

The researcher managed to conduct interviews and conduct analysis without self-interpretations or any personal interference (unless the research required doing so). More participants gave their interview in Arabic, which have been translated and then transcribed by the researcher. These transcripts were also checked by the supervisors for accuracy to minimise the interview bias.

#### **4.8 Summary of Steps and Techniques for Building the Theoretical Framework from Case Study**

This section is included in this chapter due to the criticality of the research methodology to the study. Developing a good quality research design of inducting theory using a case study involves processes from research questions specifications to reaching closure (Eisenhardm 1989). Table 4.10 summarises the road map for building this case study theory. These steps and techniques for building the theoretical framework from case study can be repeated by another researcher (although they might not come up with the same results). The phenomenon can be seen in an analogous way by different researchers, although they can provide different conclusions and discussions. The main reason for this we can find in the fact that intangible factors or perceptions of the individuals will never repeat.



**Table 4.10: Steps and techniques for building the theoretical framework from case study**

Step No.	Task	Reason	Technique/Activities	Outcome
1	Research question specification	<ul style="list-style-type: none"> <li>- Achieve study objective 1</li> <li>-Efforts focus</li> <li>-Providing better grounding of construct measures</li> </ul>	<ul style="list-style-type: none"> <li>To define research question</li> <li>To Introduce the proposed constructs</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct Extensive e Literature Review (PM previous research, RBV researches, Public Sector Research, IR researches)</li> <li>• Identify research gaps</li> <li>• Selecting The research strategy, method and philosophy</li> <li>• Selecting qualitative data collection protocols and techniques</li> </ul>
2	Selecting Cases	<ul style="list-style-type: none"> <li>- Achieve study objective 2</li> <li>- Sharpens external validity and constrains extraneous variation</li> <li>-Efforts focus on theoretically useful cases</li> <li>- Theoretical flexibility retention</li> </ul>	<ul style="list-style-type: none"> <li>-To specify population</li> <li>-Theoretical sampling (purposive sampling)</li> </ul>	<ul style="list-style-type: none"> <li>• Cost and schedule index fit with Polar Type.</li> <li>• Similar scope and nature to allow cross-group checking for the high/low project performance group.</li> <li>• Existing contact with organization and key contacts.</li> <li>• Availability and access approval for project archive files.</li> <li>• Availability of project managers of client, consultant and contractor for interviews.</li> <li>• Different scope and nature to ensure the same low/high project performance group diversity.</li> </ul>
3	Crafting Instruments and protocols	<ul style="list-style-type: none"> <li>- Achieve study aim</li> <li>-Strengthening the grounding of theory via evidence from multiple sources</li> </ul>	<ul style="list-style-type: none"> <li>-Multiple sources from qualitative data (client PM, contractor PM, consultant PM, and progress meeting reports)</li> <li>- Strengthening grounding and Fostering divergent perspectives</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Step 1:</b> Determine and Define the Research Questions</li> <li>• <b>Step 2:</b> Obtaining Access</li> <li>• <b>Step 3:</b> Select Cases and Determine Data Collection and Analysis Techniques</li> <li>• <b>Step 4:</b> Collect Data in the Field</li> <li>• <b>Step 5:</b> Evaluate and Analyse the Data</li> <li>• <b>Step 6:</b> Preparing the Report</li> </ul>
4	Entering the Field	<ul style="list-style-type: none"> <li>- Achieve study objective 2</li> <li>-Speeding up analyses and revealing helpful adjustments to collection of data</li> <li>-Taking advantage of emergent themes and unique case features</li> </ul>	<ul style="list-style-type: none"> <li>-Overlapping analysis and data collection: Opportunistic and flexible data collection method to give the researcher a head start in analysis and to make adjustment to data collection by adjusting interview questions</li> </ul>	<ul style="list-style-type: none"> <li>• Within-case Analysis (Themes generation )</li> </ul>
5	Analyzing Data	<ul style="list-style-type: none"> <li>- Achieve study objective 2</li> <li>-To Force the researcher to see evidence thru multiple lenses and to look beyond initial impressions. Also, to look for more themes</li> </ul>	<ul style="list-style-type: none"> <li>-Using within-case analysis technique</li> <li>-Using cross-case search using divergent techniques:</li> </ul>	<p>Within-case Analysis (Themes generation using word repetitions (word-based techniques to search for word repetitions and key-indigenous)</p> <p>Select 4 categories of intangible resources to look for within-group similarities and with intergroup differences.</p> <p>Select pairs of cases to list similarities and differences between each pair.</p>

Step No.	Task	Reason	Technique/Activities	Outcome
7	Comparison with the Literature	<ul style="list-style-type: none"> <li>- Achieve study objective 3</li> <li>-logical chain of evidence for emerged patterns</li> <li>-Building on internal validity, raising theoretical level, and sharpening construct definitions</li> <li>-Sharpening generalizability,</li> </ul>	<ul style="list-style-type: none"> <li>- Comparison with conflicting literature</li> <li>- Comparison with similar literature</li> </ul>	<p><b>Conflicting:</b></p> <ul style="list-style-type: none"> <li>• The juxtaposition of conflicts would force the researcher to be more creative so the result of the study could be deeper insight into the conflicting literature and the emergent theory.</li> <li>• This would also sharpen the generalizability limits.</li> </ul> <p><b>Similar:</b></p> <ul style="list-style-type: none"> <li>• Tie together similarities in phenomena usually not associated with one another.</li> <li>• The result could be a theory with higher conceptual level,</li> <li>• wider generalizability,</li> <li>• Stronger internal validity.</li> </ul>
6	Confirming Themes	<ul style="list-style-type: none"> <li>- Achieve study objective 3</li> <li>-Confirming, and sharpening theory</li> <li>-Building on internal validity</li> </ul>	<ul style="list-style-type: none"> <li>-Iterative tabulation of evidence for each theme</li> <li>-Replication logic across cases</li> </ul>	<ul style="list-style-type: none"> <li>• To make close fit between data and theory and generate new insight, relationship between constructions fit with evidence was examined. This is in the form of confirming patterns that were found previously</li> </ul>
7	Reaching Closure	<ul style="list-style-type: none"> <li>- Achieve study aim (the theoretical framework )</li> </ul>	<ul style="list-style-type: none"> <li>-Reshaping the theoretical framework from the RBV (VIOR model)</li> </ul>	<ul style="list-style-type: none"> <li>• In order to frame the model and link it to the theoretical models of the RBV, the Barney's VRIO framework assumption was considered</li> <li>• The model covers the main characteristics of strategic assets addressed in the literature</li> <li>• In the context of PM, project success is one of the main factors leading to competitive advantages</li> </ul>

## **4.9 Research Method Implication**

The qualitative research adopted in this study was found to be an effective approach in gathering culturally specific information about the opinions, values, social contexts, and behaviours of the research from projects team members. However, they were key research challenges identified during this study and some limitations in the areas of case selection, data collection and data analysis. How cases were selected and the process of data collection is presented in the following sections.

### **4.9.1 Case Selections**

Before case study analysis is performed, case selection is necessary and it needs to be presented as a convincing argument (Merriam and Tisdell, 2015). One of the limitations in case selection is that descriptions of the case are not often appropriate to learn why the case was selected, or whether it was a particular exemplar or outlier, and can that case be eliminated later on because of non-responses (Thomas 2011).

Since the selection of cases in this study was a prime key to building theory, the population was crucial in defining the entity where the research sample was taken from. The appropriate population selection helped in defining the limits for generalizing the findings as well as controlling extraneous variation. This selection allowed for the control of environmental variation which reduced extraneous variation as well as clarified the domain of the findings as a utility governmental company operating in Abu Dhabi. The cases of this study were chosen for theoretical reasons and therefore helped to replicate previous cases, extend emergent theory, and provide examples of polar types. However, the more extensive use of the secondary data source that was available from the researched organization for the selected cases, the marrying of high quality secondary data analysis with more qualitative techniques, presented an opportunity in the context and providing a construction to knowledge through empirical evidence, but limited higher exploratory potential as this prevented the researcher of the advantages to see beyond the focus of the research and to understand additional phenomena or new contexts. Furthermore, the intensive use of empirical evidence has initially led to a complex theory. Obtaining rich data gave the temptation to the researcher to build a theory that captures everything. The danger of this is that it initially led to a theory which was very rich in detail, but lacked simplicity. With vivid and voluminous data, theorists may lose their sense of proportion as assessment of the most important relationships and which relationship is idiosyncratic to a particular case become harder.

Narrow and idiosyncratic theory is another weakness that may arise from building theory from cases which can effect generalizations and present very idiosyncratic theory.

#### **4.9.2 Data Collection**

Case study technique allows researchers to choose among various kinds of methods (observations, interviews, documents, records, and etc.) to collect data and this is a unique strength of the case study approach. Usually many researchers use a few different methods for data collection, whether structured or unstructured, they can be applied in natural settings (Hsieh 2004) such as in the field of project management. The main technique used to collect data for this study was the technique of in-depth interviews. However, the second set of the semi-structured interview questions had some important limitations. These questions were designed initially to confirm previous themes which emerged in the first set of four case studies to enhance validity of the finding. But, after conducting more literature review on recent studies, and conducting more critical assessment of data, a different set of themes emerged. Therefore, the questions had limitation on the side of confirming the newly emerged themes from these four case studies during the confirmatory cases. Thus, the evidence generated was not strong enough for themes to stand on their own and therefore further quantitative research could confirm the patterns that was found.

Furthermore, the attitude towards the author of this thesis was generally friendly and open. However, for other researchers who are willing to work in this research context, it has to be highlighted that getting access to the region and units of analysis requires a lot of patience, since the societies in the Middle East are in the process of tremendous change. It may be that in a few years, organizations in the region will be more open to research in this direction.

The initial plan of the project was not followed as originally anticipated. Changes in plan were due to the following factors:

- Most interviews were planned and agreed to, but due to the busy schedule of project managers, interviews were rescheduled, which caused a time drift of the initial plan. Furthermore, the research had been delayed as a result of data collection difficulties. Originally the data collection phase was planned to start in January 2011 and was scheduled to be finish by October 2013 but extended later to 2015 in order to follow the process of iteration back and forth between steps that involved moving from cross-case

comparison, going back to the research questions and then again to the field for gathering more evidence.

- Some interviewees did not feel comfortable enough at the initial stage to disclose information about their projects. Therefore, the researcher had to conduct more than one interview until rapport was developed. This also caused some delay in the plan.
- While preparing for the fifth case, the interviews were interrupted at some point, and the company stored project documentation with restricted access until full mobilization could take place to the new company office. The researcher, at that point, was not able to review project documentation before conducting additional interviews, and further data collection activities were put on hold until access to the archiving office was again given to the researcher.
- Another factor was the available budget for this research project. Since this study was self-funded, the number of flights and the duration of the data collection period in Abu Dhabi were extended and more funds had to be arranged. The effort to liaise with the project team members also utilized a large percentage of the available budget.
- All contacted persons seemed friendly and open, although the research project seemed to cause some degree of reluctance from the consultant and contractor managements and some project team members to assist the researcher. While doing the interviews, multiple events occurred that caused interviewees not to provide answers due to distraction or some other unplanned time commitment.
- The planning of interview sessions was a huge challenge. Before interviews were started, the research set-up had to be explained in detail to the company's management and participants. One of the main goals of the researcher was to be accepted by the project team. In order to get data from multiple sources, many visits were necessary, as explained in the research design.
- Cultural barriers can create tremendous difficulties in complex projects. This research was complex in that it dealt with data that not everyone was comfortable sharing. There was reluctance to share negative lessons for fear that they might not be viewed as good project managers.

Table 4.11 illustrates the actual project plan. The initial plan of the project was not precisely followed, as highlighted above. The plan required modification because the majority of

interviews initially scheduled were rescheduled, which caused a time drift as mentioned above.

**Table 4.11 Study Plan**

Activity	Months	Months	Months	Months	Months
	1-12	13-24	25-27	27-30	31-39
Detailed literature review and creation of relation					
Collecting data via interviews and archiving files					
Presenting the data and generating the results					
Evaluation of outcome and practice					
Conclusions and generalizations					
Preparation and presentation of first draft					
Revision based on the supervisor's feedback					
Submission of thesis					

#### 4.9.3 Data Analysis

It was briefly mentioned that case study analysis is used as the data analysis technique in this study. Very often data analysis comes together with data collections (Hsieh 2004). Many researchers do the case study analysis from the bottom up, or from general to specific. Also, Baxter and Jack (2008) mentioned direct interpretation. By this data are analysed at the very beginning of data collection. Considering raw data, analytical statements are generated. Researchers revise analytical statements until reasonable answers on research questions are within reach. One of the limitations of this kind of case study technique is that analytical statements are criticized as descriptive rather than critical. And this analysis has been criticized as "story telling". Since whole cases are difficult to compare with one another when the goal of the research is to develop generalizations that represent multiple accounts (Ayreset al. 2003), the researcher used within-case analysis technique and cross-case coding and sorting in order to produce contextually grounded and generalizable findings (Baumann 2013). This tactic helped to force the researcher to go beyond initial impressions through the use of diverse and structured lenses on the data to increase the chances of accurate and reliable theory with a close fit with the data and to capture novel findings from the data. However, while acknowledging the benefit and

quickness of using the computer to generate themes, looking at the style and format of the progress reports and the way the interview conversations went, the researcher found that using the computer at that stage might cause confusion and inconsistency between cases due to the vividness and volume of data in the progress reports, the researcher might lose a sense of proportion as assessment of the most important relationships and which relationship is idiosyncratic to a particular case become harder. Furthermore, consistency of using the same method throughout the cases was important as some cases had missing reports or fading texts and therefore it would have been time consuming to rewrite a huge volume of the progress meeting reports.

#### **4.10 Ethical Considerations**

The researcher identified and addressed potential ethical problems in the following specific areas.

(1) *Anonymity* - The maintenance of confidentiality; (2) *Disclosures* – avoidance of false or deceptive statements; (3) *Participation* – informed consent to research; (4) *Inducements* – for research participation; (5) *Reporting* – of research results and (6) *Ethics* – conducting the study without bias and partiality.

This study was presented for approval at Bournemouth University. An appropriate research approval was obtained from the firm before data collection. Informed consent of participants and the firm's affiliates was obtained before they engaged in interviews. Every participant signed an approval from confirming that the purpose of the study had been explained and information provided during the study would be assured of anonymity and confidentiality. Moreover, for the dissemination of the outcome, the data was analysed and presented in the form of aggregated statistical summaries and a report. Documents and data relating to the firm would remain known only to the researcher and to the supervisors involved. Every document and information taken from participations would be immediately keyed into a database and stored in encrypted storage devices using keywords. Lastly, supporting letters from management were shown to participants to reassure them.

Informed consent was obtained from interview participants using the following:

- An information sheet was provided detailing the nature and expected outcome (project abstract).

- Respondents were given the chance to ask questions about the research and their participation.
- Respondents were informed that they could withdraw from the research after data collection.
- The use of data in the research or any publications or subsequent archiving was explained to the respondents.

#### **4.11 Conclusion**

The methodology of the study and the focus of which is to investigate the influence of intangible resources on project success was presented in this chapter. Qualitative research design and the case study approach were particularly appropriate for this study and this chapter discussed the philosophical approaches for qualitative research and the arguments for selection of a qualitative procedures. The whole case study protocol was explained in detail, consisting of six steps: Step 1. Determine and define the research questions; Step 2. Obtaining access; Step 3. Select the cases and determine data collection and analysis techniques; Step 4. Collect data in the field; Step 5. Evaluate and analyse the data; and Step 6. Prepare the report. Also certain tests that were used to gain the necessary quality for the research study (construct validity, internal validity, and external validity) were explained in this chapter. How the theoretical framework from the case study was built for this study was presented in the chapter. The steps and techniques were presented in table 3.10 and explained accordingly. Ten cases were selected for study and provided consistent, differentiated and ambiguous information-rich settings for study that allowed the emergence and interplay of various factors. Two data collection techniques were employed: documentary data analyses and interviews. Documentary analysis was used to gain a deeper understanding of the projects and to identify project specific issues with control implications. The interviews elicited information about social, human, relational and organizational forms of capital affect project success. The last part of this chapter discussed the research methodology implications where case selections, data collections, and data analysis were presented. Also, the researcher identified and addressed potential ethical problems and considerations. Chapter 5 explores four case studies, their findings, and analysis.



## Chapter 5: Research Description

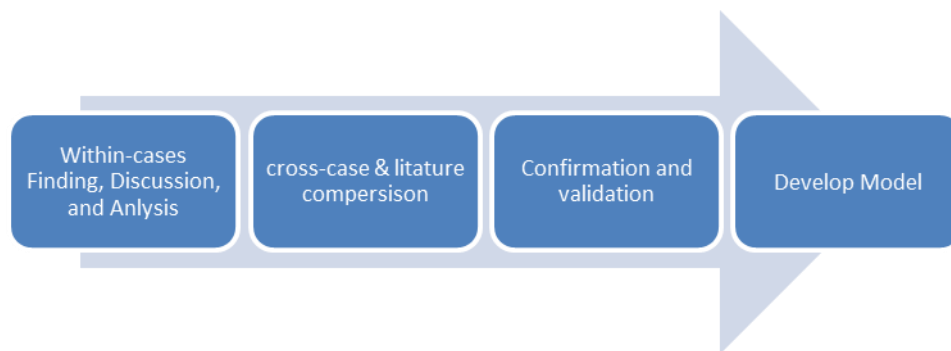
### 5.1 Introduction

The preceding three chapters (2, 3 and 4) described the philosophical and methodological foundation, presented the literature review, and described the research setting for this research study. Chapter 5 and chapter 6 objectives are to explore the characteristics of Group A case studies to understand similarities and differences of the research contexts. This chapter delivers within-case analysis that includes data analysis, and discussion of results, where chapter 6 delivers cross-case analyses of the first four cases. This group of cases consists of two high and two low performing projects that were selected based on the cost and schedule indices. Data presented were collected using two instruments (semi-structured interviews and supporting documents), and the findings for these four cases provided explanations to the four research questions of the study and revealed factors leading to the project's success (**Study objective 2**). The researcher presented and discussed the research evidence comprising the influencing factors and quotes from the case study research, and findings were identified and presented for further processing.

The results of each case are explained in separate sections of the chapter. The main findings and their influences on project success are explored as part of the case study analysis. The chapter is structured to elaborate on the empirical plan and discuss the various components comprising the research design, enabling the researcher to find explanations to the research questions. The purpose was to explore the characteristics of the four cases (low and high) to understand similarities and differences of the research contexts. Overlapping data collection with data analysis in this chapter not only provided the researcher with a head start in the analysis but, more crucially, allowed the researcher to benefit from flexible data collection (Miles and Huberman, 1994). Indeed, a prime feature of building theory is the flexibility to make adjustments to the process during the data collection phase (Silverman 2010). These adjustments were the addition of questions to an interview protocol to probe particular themes which emerged (Silverman 2010). These adjustments gave the opportunity to the researcher to take advantage of special opportunities presented in a given situation and probe emergent themes. These alterations allowed the researcher to understand each case individually and in a much more depth possible.

The goal was not only to generate summary statistics of observations but also to take advantage by altering data collection in order to better ground the theory and generate new theoretical insight (Miles and Huberman, 1994). However, this flexibility was a controlled opportunism where the researcher took advantage of the emergence of new themes and the uniqueness of a specific case in order to improve resultant theory (Yin 2009). Therefore, the results are explained as within-case results in chapter 5 and cross-case results in chapter 6 along with literature comparison in order to build internal validity, raise theoretical level, and further sharpen construct definitions, whereas chapter 7 illustrates the ‘confirmatory case study’ analyses for the theoretical validation. Figure 5.1 explains the steps taken to carry forward the results from the within-case analysis to the cross-case analysis and, finally, to the development of the theoretical framework where table 5.1 illustrates the order by which cases were analysed.

**Figure 5.1: Steps Taken to Carry the Results**



**Table 5.1: Chapter 5 Case Studies**

No.	Case Study	Case Description
1	Case Study No. 1, Project - 1755	Al Wathba Enhanced TSE Treatment Plant
2	Case Study No. 2, Project - 1149	Mafraq WWTP Capacity Enhancement
3	Case Study No. 3, Project - 1185	Construction of sewerage connections and related works for isolated properties in Abu Dhabi Island and Mainland - Phase 1
4	Case Study No. 4, Project - 1484	Construction of Sewer Connection and Related works in Abu Dhabi Island and Mainland Phase II

## 5.2 Case Study 1 (Project 1755)

This case study was an irrigation project, which involved taking TDC water for further treatment. It was awarded to a company from Singapore. This project was their first in the region. The Abu Dhabi Environment Authority made a request to ADSSC through the Executive Council to award

this project to this company as a pilot project. The overall cost of the project was divided between a capital project worth 30 million AED and maintenance and an operation worth 15 million AED for 5 years. The design and construction phase of the contract was 9 months in duration, including commissioning. The contract also included the operation and maintenance of the plant for 5 years. This case study was selected based on the cost and schedule index and categorised as one of the low performing projects. Data were collected using two instruments (semi-structured interviews and supporting documents). Two semi-structured interviews were first conducted with the client project manager whose contact detail was obtained from the progress meetings reports. Following that, two more semi-structured interviews were carried out with the assigned consultant and contractor project managers. Their contact details were also obtained from the progress meeting reports. Table 5.2 includes general information about the project, interviews, and interviewees as well as the research method.

**Table 5.2: Case General Information (Project 1755)**

Project	Client	Consultant	Contractor	Project Value
Al Wathba Enhanced TSE Treatment Plant	ADSSC	AECOM	BSWS	AED 55,111,811
Project Start Date	Project End Date	Methodology	Collection Method	Instruments
13 June, 2010	12 March, 2011	Case Study	Supporting Document and Interviews	Semi-structured, open-ended, direct/indirect, formal supporting document
Interviewees Code	Role in Project	Interview Type	Interview Duration	Location
Client Project Manager, C1-CL-IN1	Project Manager (Client)	Semi-Structured Interview	50 + 30 min	ADSSC Headquarter
Consultant Project Manager, C1-CL-IN2	Project Manager (Consultant)	Semi-Structured Interview	25 min	ADSSC Headquarter
Contractor Project Manager, C1-CL-IN3	Project Manager (Contractor)	Semi-Structured Interview	25 min	Phone

### 5.2.1 Project Overview

Details pertaining to the project were based on the progress meeting reports collected for this project, which are summarized below.

The irrigation project, which involved taking TDC water for further treatment, was awarded to a company from Singapore. The cleaned water the project produced was intended for irrigation of edible products; the project's scope included:

- Design, procurement, and construction of a TSE enhancement plant consisting of inlet balancing tanks, ultra-filtration membrane system and UV disinfection units, on-site hypochlorite generation and a storage and dosing system, in addition to auxiliary administration and site facilities. The plant has the capacity to handle about 27,250m<sup>3</sup>/d of TSE.
- The treated water-flow should be greater than 93% of the influent at all times, producing around 25,500 m<sup>3</sup> of treated water per day. The enhanced TSE should be connected to the existing irrigation network in the area.
- The design and construction phase of the contract is 9 months in duration, including commissioning, from the date of the award letter. The contract also includes the operation and maintenance of the plant for 5 years.

The contract commencement date was 13 June 2010, and the contract completion date for EPC was 12 March 2011.

According to the official progress meeting reports, with 20.4% project time having elapsed, the contractor's performance during the first 6 months following the official commencement date was slow. The project client and consultant raised concerns that the contractor had not made progress due to not submitting and obtaining approval for the method statement, as well as not having an approved Safety Officer. Furthermore, the contractor had not completed the company's registration in the city of Abu Dhabi, which might have negatively affected the release of the advanced payment as well as mobilization to the site. Additionally, the contractor had not fully mobilized its permanent staff in Abu Dhabi, apart from the senior project manager, senior process engineer, and the project manager. However, as indicated in the progress meeting report, the proposed project manager was rejected by ADSSC, because he was found to be incompetent and the project engineer was only conditionally approved. In fact, only the senior project manager and senior process engineer were approved. A possible explanation of this issue is that the progress during the first 6 months was negatively affected by the absence of a competent project leader. As a result, there was an absence of technical excellence of information communicated to and

from the client. During this period there might be some additional issues affecting the project such as management support, lack of experience, and planning capability.

As documented in the progress meeting reports, with 41.9% of the project time having elapsed, project completion was only 10.4%, which was still less than required. Despite the usual lengthy process for obtaining a permanent power, the contractor had not yet started the application process in spite of the previous reminders by the project client and consultant. Concern was raised by the project client and their consultant regarding the issue, but no major action was taken by the contractor's head office, as they claimed that certain decisions had to be made by top management, in accordance with the company's policy and procedures. The contractor completed the company's registration in the city of Abu Dhabi, which might have affected the release of the advanced payment as well as the mobilization to the site. Furthermore, the contractor was late to fully mobilize permanent staff in Abu Dhabi as well as material procurement and delivery. A possible explanation of this issue during this period is that the project team had no innovative solutions for issue of power connection as well as no team support via facilitation and organization of the project processes. Additionally, there appeared to be issues in management support and planning capability.

Due to the factors related to monitor and control, problem solving ability, lack of experience, and weak relationship, the project outcome might have been influenced. For example, with 77% of the project time elapsed, project progress was only at 21.6%. Moreover, the permanent power connection at that date was still pending, and the issue of delays in material submissions still existed despite prior reminders to the contractor. To improve progress by providing support to the contractor, AECOM and ADSSC asked the contractor to engage them with regards to dealing with government entities.

Additionally, due to the factors related to problem solving ability, and weak management support, the project outcome might have been influenced. For example, with 100% of the project time having elapsed, project progress was only at 32%. The permanent power connection up to that date was still pending. This major issue might have gravely affected the project execution as this was a pilot project which is a non-typical project (a typical project involves steps and processes that are well known); therefore, in such cases support from entities is vital to move and execute the project. Furthermore, material submissions by the contractor were still pending and might have contributed heavily to delaying the project handover date. The 9-month contract period for

construction of the plant had been exceeded by 3 weeks, despite the improvement noticed with regards to BSWs knowledge of their contractual requirements and of the ADSSC and local municipality processes and procedures.

A major improvement in progress was seen after 88.7 weeks, as completion reached 94%; however, this progress was still considerably behind schedule as the contract period was only 39 weeks. The project was finally handed over after almost 114 weeks, clearly showing a significant project completion delay of almost 3 times the duration of the original contracted schedule.

### **5.2.2 Findings and Discussion**

The findings of this case provided explanations to the research questions of the study and revealed factors leading to the project's success. These factors are related to the RBV as they fit the assumption of the RBV in terms of being valuable, rare, inimitable, and non-substitutable (VRIN). However, the findings presented below (in within case phase) provides an explanation to one of the research questions of the study and revealed one factor leading to project success where chapter 6 (the cross-case chapter) revealed and presents more explanations and additional factors for this case.

The finding related to the technical skill of the project manager may have the potential to provide an explanation to research question 1. The researcher discussed the research evidence comprising the influencing factors and quotes from the case study research, and the theme was presented for further processing in the next phases.

#### **A. Leadership Industry-Specific Experience - (*Theme 1*)**

Appendix 2 contains the case study transcript along with interviews questions used. Table 5.3 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present themes for further discussion.

**Table 5.3: Final Coding for Leadership Industry-Specific Experience**

Final coding framework	Initial coding framework	
Leadership Industry Specific Experience	<ul style="list-style-type: none"> <li>• PM technical specifications of DBs, transformers is perceived weak</li> <li>• PM is perceived to have weak Industry specific and local experience</li> <li>• PM is perceived to negatively affect outcome</li> <li>• No Innovative solutions for issues and problems</li> <li>• No Innovative ideas for the team to become more effective and efficient</li> <li>• No Team leader Support via motivation</li> </ul>	<ul style="list-style-type: none"> <li>• PM is perceived to disturb the work</li> <li>• No Team Support via facilitation</li> <li>• No Team Support via organization of team process.</li> <li>• No Technical Excellence in nurture/in force technical practice</li> <li>• No technical Excellence in monitor technical excellence</li> <li>• No technical Excellence in organization of accumulated technical experience</li> <li>• No technical Excellence in organization of information communicated to/from customers.</li> <li>• No innovation in organization of acquired knowledge</li> <li>• Industry Specific Experience is valuable</li> </ul>

While the researcher was trying to find explanation for research question 1 on how human capital intangible resources influence project success; he asked the three interviewees on the project leadership factor and why the proposed construction manager was rejected, as stated in Progress Meeting No. 13, and how that influenced the overall outcome of the project:

- *Proposed construction manager was rejected by AECOM and was asked for alternative candidate to be submitted by BSWS. (Case 1-Progress Meeting 13)*

One of the interviewees stated:

- *The leadership was not good at all. (Client PM, C1-CL-IN1)*

According to Pandya (2014), leaders are held accountable for the day-to-day project oversight, the triple constraint of budget, time, and quality as any manager is. They also need to manage change, handle behavioural and emotional flares with internal and external stakeholders, assure resource availability, and build relationships to create a high performance team. Leaders also motivate and inspire their team, and stakeholders to embrace change and the strategies (Prabhakar 2005). These traits and styles might have helped to increase project success in this project. This is clearly can be seen while the researcher was trying to find explanation for research question related to

the organizational capital on how management support factor influenced project success; interviewees stated:

- *It seems to be that the office here was not getting good and enough support from the head office.* (Client PM, C1-CL-IN1)
- *We did not notice the support given to the team from the head office.* (Consultant PM, C1-CL-IN2)

While acknowledging the importance of organizational structure for the enhancement and deployment of resources for project success (Marr and Adams, 2004; Litschka et al. 2006) since it can determine how workflows and processes can be handled through the organization, the answers provided do not necessary reveal that weak management support has affected the outcome due to issues at the organization level as quoted above. The answer may not mean that management support was weak to devote time to the project in proportion to its cost and potential and to facilitate the management problems (Garriety 1963). Additionally, it may not mean that top management was weak to dynamically recognize and concentrate investment on the foremost strategic areas for the organization (Doll 1985; Ootoole and Ootoole, 1966; Rockart et al. 1984). Furthermore, it may not mean that top management was weak in resolving stakeholder conflicts and winning the hearts and minds of the project team (Morton 1983). However, it may be related to the project leadership factor. This is because the project leader is to assure resource availability, and build internal relationships with his management to create a high performance team and obtain necessary support from the management throughout the project (Lundy and Morin, 2013). The leader represents the influential factor to the organizational mission and goals and first line teamwork (Trivellas and Drimoussis, 2013). The ability to manage stakeholders' expectations is a critical skill for project managers. It is more than just expectations; it is the purposeful crafting of a collaborative and positive relationship that truly separates the very good project managers from the superb project managers (Overby and Suvanujasiri, 2012). Effective stakeholder management requires an action plan and mastery of basic networking skills. In this project, evidence suggests that leadership traits and styles to ensure that a leader is effective were not present in the project resulting in lower project performance. This is clearly can be seen while the researcher was trying to find explanation for research question related to the relationship capital on how the relationship factor influenced project success; interviewees stated:



- *The team suffered a lot as they have not done a project before here so they had to develop the relationship with all entities and know and meet the requirements of each. I think the team suffered a lot from this factor and got fed up.* (Client PM, C1-CL-IN1)
- *No previous relationship existed with ADDC to help in pushing the subject by the contractor.* (Consultant PM, C1-CL-IN2)
- *This was our first time to deal with ADDC. Getting approval from them was an issue which affected the handover.* (Contractor PM, C1-CL-IN3)

While acknowledging that relationships with entities directly associated with the project is needed to speed up the process and avoid delays (Ning and Ling, 2013), the data obtained may not necessarily mean that there was an issue only at the social capital level related to the creation, maintenance and extension of the external relationships of a firm. This is because it consists of elements of human and structural capital. Human element such as the team leadership because effective stakeholder management requires an action plan and mastery of basic networking skills at the team leadership level as stated above.

Based on the discussion so far, project leadership is an important human capital factor that adds value to any organization to increase project success. However, assigning a more experienced project manager could have demonstrated a greater ability to deal with technical issues and to adapt to different standards, policies, and procedures, as well as deal with and promptly solve project technical problems. It was found in this case that the project manager's lack of industry-specific technical experience might have affected the project negatively. The project manager assigned to this project might have had weak technical experience, which might have resulted in his being unable to follow the standards, procedures, and processes adopted in the region. One interviewee stated:

- *Very weak technical skill [contractor PM].* (Client PM, C1-CL-IN1)

The above statements can be supported by statements found in the progress meeting reports:

- *ADSSC advised extreme concerns at the lack of progress and understanding of ADSSC procedure by the contractor, and during more than 8 weeks of the 9 months duration, a major concern is that BSWs made no progress up to date and displayed lack of*

*knowledge in ADSSC contract procedures and local municipality processes and procedure in particular. (Case 1-Progress Meeting 5)*

- *BSWS were reminded again to the slow progress and adherence to ADSSC requirement and procedure. (Case 1-Progress Meeting 14)*

The lack of technical experience might have affected the project manager's problem-solving ability, as there were technical issues he might have not been able to solve promptly. One interviewee provided the following quotes while the researcher was trying to find explanation for the problem solving ability factor:

- *The team leader problem solving ability was very bad. (Client PM, C1-CL-IN1)*
- *Not at all. They have done similar project and the issue as in problem solving. (Client PM, C1-CL-IN1)*
- *Had a MAJOR issue at the start of the project which was connecting electricity to the project which heavily affected the execution of the project. (Client PM, C1-CL-IN1)*

This was confirmed when the researcher asked the client interviewee on how the lack of technical experience might have affected the project manager's problem-solving ability and where there were technical issues he was not able to solve promptly. The client interviewee gave the following example:

- *The team leader's knowledge in ADDC technical specifications of DBs, transformers and electrical cables was very limited. If he was aware of these specifications, he could have acted at the early stage of the project and either suggested alternative proposal or requested materials specification changes (Client PM, C1-CL-IN1)*

At the earlier set of interviews when the researcher asked the client and consultant interviewees how the assigned project manager influenced the project outcome, interviewees stated:

- *The team leader's problem solving ability was very bad. The team leaders here and abroad do not have the local experience. These people may have strong experience back home and may fit but when they come here, local experience is needed. (Client PM, C1-CL-IN1)*
- *Leadership was an issue on the project. (Consultant PM, C1-CL-IN2)*

Considering the discussion so far, this echoes the findings of Whitten (2000), claiming that companies are more likely to engage professionals with better management and leadership skills rather than technical skills, but also we can expect that the project manager that lacks technical skills can bring serious barriers (Toor et al. 2006). If a project manager is well versed and experienced in the application of project management principles (as in this project case), yet is relatively new to the industry or country, where the principles will be applied, the project manager can expect to experience a serious handicap. The project manager may have difficulty with the terminology, the technology, and knowing when and what questions to ask and sufficiently being able to understand the responses (Whitten 2000). The project manager may have to have the knowledge, skills, and experience to be able to recognize when problems surface or potential problems are looming. A project manager should have the ability to articulate problems. They should be able to bring together the right people to find a solution to problems. A project manager should also be able to properly assess when the problem has been addressed and closed along with the proper sense of urgency and with the ability to adjust his/her style of actions and decision making.

With such technical experience, the assigned team leader can provide a better technical excellence to team support by motivating the team, facilitate team activities, and organize team work in a process oriented way. While trying to find explanation for research question 2 on how organization capital intangible resources influence project success, this case gave evidence of low motivation, no team Support via organization of team process, and weak planning for team activities. Interviewees stated:

- *Team was not motivated.* (Client PM, C1-CL-IN1)
- *The contractor had to do certain requirements and process necessary to start the execution which they were not aware of.* (Client PM, C1-CL-IN1)
- *The temp electricity contributed to the delay of the project. I would say that the cause was bad planning including risk planning.* (Consultant PM, C1-CL-IN2)

While acknowledging that motivation is a key success factor for a project because without dedication and good performance to the project success by the team members, all other competencies are useless (Rose and Manley, 2012), however, the answer obtained may not only necessary mean that there was an issue only at the organization capital level related to the

organizational structures that support employees to fulfill their duties (Biedermann et al. 2002). Answer provided may not necessary mean that there was an issue in the organizational justice that includes three main types: distributive justice, procedural justice and interactional justice (Rose and Manley, 2012). Furthermore, it may not necessary mean that team was not motivated due to a range of negative motivation drivers such as: inequitable contractual risk allocation; late involvement of key stakeholders; inconsistency between contract intentions and relationship intentions; inadequate price negotiation; inconsistency between the project performance goals and incentive goals; and unfair and inflexible incentive performance measurement processes (Rose and Manley, 2012). However, according to Stoi (2003), organizational capital includes factors that surround employees and form the basis for development as well as usage of other intangible resources such as team leadership. Furthermore, while acknowledging that planning capability is key success factor of a project as project teams with strong planning capability can produce a strong resource plan and a risk plan that can help with project speed and meet the project time need (Caughron and Mumford , 2008), the answer provided may not necessary mean that there was an issue only at the project team level to recognize problems, formulate initial plans, refine their plans, and eventually implement those plans (Mumford et al. 2001). This is because human capital includes factors that surround employees and form the basis for development as well as usage of other intangible resources such as team leadership. The team leader can nurture, enforce, and monitor the technical excellence by ensuring it is realized by members of his/her team. This case gave evidence of weak technical excellence in nurture/in force technical practice and weak technical excellence in monitor technical excellence. One Interviewee stated:

- *He was technically weak and also his feedback.* (Client PM, C1-CL-IN1)

With technical experience, the assigned team leader can support innovation in the team work. This is by developing the team spirit and desire to experiment and try new things and unconventional solutions. Furthermore, with such technical experience, the assigned team leader can better organize accumulated knowledge gained by the team, and making it available and easy to retrieve whenever needed by any team member. While trying to find explanation for research question 4 on how social capital intangible resources influence project success, even though the social aspect between team member was perceived to be strong which can increase idea sharing ,knowledge management, stimulates the learning process and furthermore contributes to

incorporate knowledge of strategies (Bueno et al. 2004; Chaminade and Roberts, 2002). One interviewee stated:

- *His project team seems to be in good relation as they worked together in many other similar projects before and they come from same country and share same language. (Client PM, C1-CL-IN1)*

Connection between team members improves the capacities for the sharing, creation and management of knowledge. It also helps in solving conflict within organizations, integrating tacit knowledge and speeding up the learning process (Connell and Voola, 2013). However, the data obtained may not necessary mean that there was no issue at the social capital level related to the sum of resources accumulated in the organization by a stable network of intra-organizational relationships. This is because due to weak technical skill of the assigned project manager, he might have not been able to better organize accumulated knowledge gained by the team, and making it available and easy to retrieve whenever needed by any team member as the following quote may indicate:

- *Requirements and procedures were not clear at the start of the project so it took time from us to provide. It would have been better if those requirements provided guidelines on how to follow them. (Consultant PM, C1-CL-IN2)*

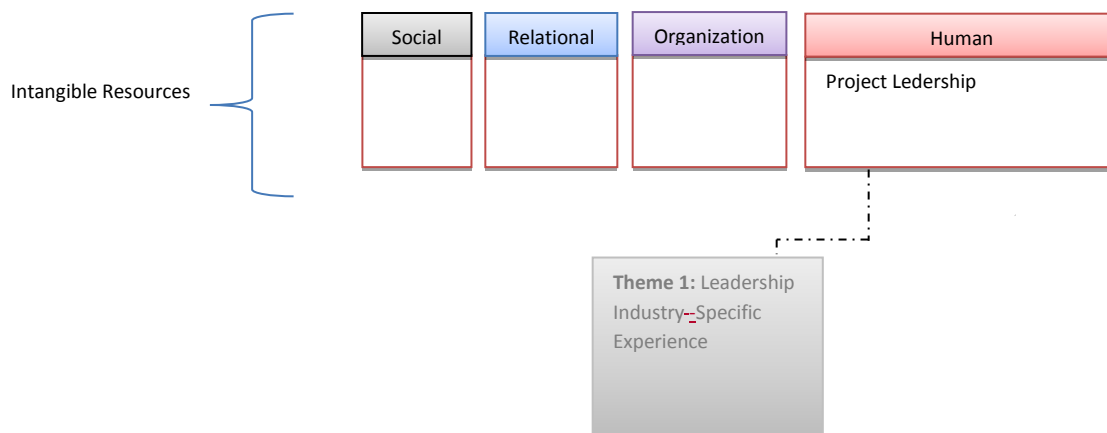
Therefore, with essentially no technical experience in the utilities project in Abu Dhabi, there is a higher chance that a project manager may make costly mistakes (such as the electricity specification issues in this project) that an experienced utilities-related project manager easily would have avoided. This finding may not echo the findings of previous research claiming that the conventional technical project manager has less impact on project success than previously thought. Boards and top managers may have to personally accept that the technical skill of project managers has more influence on whether a project fails or succeeds. This argument is presented in greater detail in chapter 6 and the finding was compared with existing research.

### **5.2.3 Conclusion**

The analysis of this case revealed some initial findings and a main theme that is carried forward to the rest of cases. This theme could be confirmed through multiple sources and needed to be validated further by the other cases. Nevertheless, it can provide a good basis for **Research Question 1** and for the theoretical framework. The factor that is presented in the above sections is

the technical skill of the project manager might have a strong influence on the project outcome. This theme needs to be observed carefully in the other cases. Regarding the other factors influencing the project outcome such as those related to organization, relationship and social capitals, themes were not generated in the within case analysis due to limited evidence and slight responses related to the themes presented in the within case. However, there are presented in the cross-case chapter 6 as this phase allowed the researcher to look at the data through multiple lenses. Figure 5.2 displays the finding of this case in a contextual framework as part of the development of the overall conceptual model. The gray color boxes indicate that this theme need to be further confirmed and validated. The next section is the analysis of case study 2, which is a project to enhance the capacity of a water treatment plant located in the Abu Dhabi. More focus was placed to find more explanation that can potentially help to provide strong answers for the other categories related to organization, relational, and social capital.

**Figure 5.2: Case 1 Framework**



### 5.3 Case Study 2 (Project 1149)

This case study was an enhancement project to the capacity of the Mafraq Water Treatment Plant located in the Abu Dhabi Mainland area. It was awarded to a local contracting company (CONCORDE). This project was not their first in the region. The overall cost of the project was AED 44,904,258. The construction phase of the contract was 300 days in duration from the letter of award. This case study was selected based on the cost and schedule index and categorised as one of the high performing projects. Data were collected using two instruments (semi-structured interviews and supporting documents). One semi-structured interview was first conducted with

the client project manager whose contact detail was obtained from the progress meetings reports. Following that, two semi-structured interviews were carried out with the assigned consultant project manager and one interview with the assigned contractor project manager. Their contact details were also obtained from the progress meeting reports. Table 5.4 includes general information about the project, interviews, and interviewees as well as the research method.

**Table 5.4: Case General Information (Project 1149)**

Project	Client	Consultant	Contractor	Project Value
Mafraq WWTP Capacity Enhancement	ADSSC	Parson	Concorde	AED 44,904,258
Project Start Date	Project End Date	Methodology	Collection Method	Instruments
25 March 2008	18 Jan 2009	Case Study	Supporting Document and Interviews	Semi-structured, open-ended, direct/indirect, formal supporting document
Interviewees Code	Role in Project	Interview Type	Interview Duration	Location
Client Project Manager, C3-CL-IN1	Project Manager (Client)	Semi-structured Interview	45 min	ADSSC Headquarter
Consultant Project Manager, C3-CL-IN2	Project Manager (Consultant)	Semi-structured Interview	10 + 5 min	Phone
Contractor Project Manager, C3-CL-IN3	Project Manager (Contractor)	Semi-structured Interview	15 min	Phone

### 5.3.1 Project Overview

The purpose of this project is to enhance the capacity of the Mafraq Water Treatment Plant located in the Abu Dhabi Mainland area. The scope of the works included the following:

- Water treatment facilities based on the sequencing batch reactors (SBR) process by modifying the two effluent storage tanks
- Flow control and monitoring system to be implemented on the inlet and outlet pipes
- Technical building for the air blowers Main Circuit Breaker (MCC) and automation panels
- In-line distinction by means of injection of chlorinated water

- Refurbishment of existing pipelines between the effluent storage tanks and the storage round tanks
- Sludge pipe between the effluent storage tanks and the existing mixing chamber
- Inspection and refurbishment (if necessary) of the existing sludge pipe between effluent storage tanks Number 1 and 2 and activated sludge collection chambers number SST/SCC/1
- Supply of spare parts for 3 years' operations (provisional items)

The project was awarded to a local company, and the overall cost of the project was AED 44,904,258. The duration of the project is a total of 300 days from the date of the letter of award. The Commencement Date was 25 March 2008 and contract Completion Date was 18 January 2009.

According to the official progress meeting reports, with 41% of the project time elapsed, project progress was well behind the scheduled 27% completion since the actual progress was 9%. Reasons stated for the slow progress were beyond the contractor's control, as the power connection was not available, and major activities were waiting approval of the SBR process design. However, it appeared to be that there was an issue on the design planning process on the side of the client.

Due to the factors related team-based problem-solving, team ability to expedite work, mistakes in future improvement projects by client, consistency between the project performance goals and incentive goals, trust among team members, the project outcome might have been influenced. For example, after 47% of the contract period, a revised progress schedule was approved showing 18% completion compared to the original schedule of 55%. Since the actual progress was only 13%, the contractor was asked to accelerate the material submission, as only 25 of 42 materials had been submitted by that date.

With 58% of the time having elapsed, the revised progress schedule indicated 22%, whereas the actual progress was 15% due to the fact that most of the major activities were still waiting for approval of the SBR process design. The issue of the design planning process on the side of the client appeared to still making a negative effect.



At 90% of the contract period, the actual progress was 27% against the scheduled progress of 90%, and the contractor was 18 weeks behind schedule. According to the progress meeting report comments, the delay was mainly justified as being due to the material submission, the method statement, and PTW approval; in addition, work could not start at the SBR tank due to tank refurbishment.

Due to the factors related connection and relationship, strong rational behaviour and cooperation, team-based problem-solving, and strong industry-specific experience, the project outcome might have been influenced. For example, after 103% of the contract period, the actual progress was 32% against the scheduled progress of 100%, and the contract had officially expired. The delay was justified as stated above, and the contractor was asked to submit a request for an extension of 152 days, which was approved. Furthermore, after 92% of the revised contract period, the actual progress was 51% against the new scheduled progress of 89%, and the contractor was 18 weeks behind schedule. That delay was justified due to some unexpected changes to the tank dimensions, along with additional air piping and diffusers that would be delivered to site by mid-June and require another 2 to 3 weeks for installation.

With 171% time elapsed, the actual progress was 93% against the revised schedule progress of 100%. However, the major works had almost been completed and were ready for testing and commission. The project was finally handed over on 30 November 2009 after completing the items on the snag list.

### **5.3.2 Findings and Discussion**

The findings of this case provided explanations to the four research questions of the study and revealed factors leading to the project's success. These factors are also related to the RBV as they fit the assumption of the RBV in terms of being valuable, rare, inimitable, and non-substitutable (VRIN). However, findings presented below in the within-case analysis provided explanations to two research questions of the study and revealed four factors leading to the project's success where chapter 6 (the cross-case chapter) revealed and presents more explanations and additional factors for this case.

The analysis of this case revealed some initial findings and main themes that are to be carried forward to the rest of cases. The new finding was that the three types of experience that might have a strong influence on the project outcome. These three types of factor have the potential to provide a good explanation to research question 1 of the study. Additionally, the findings of this case provided an explanation to research question 2 of the study and revealed one factor leading to the project's success. The researcher discussed the research evidence comprising the influencing factors and quotes from the case study research, and the themes were presented as the following for further processing in the next phases.

**A. Team Familiarity - (*Theme 2*)**

Appendix 2 contains the case study transcript along with interviews questions used. Table 5.5 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present themes for further discussion.

**Table 5.5: Final Coding for Team Familiarity**

Final coding framework		Initial coding framework
Team Familiarity	<ul style="list-style-type: none"> <li>• Team is perceived to have good industry-specific experience</li> <li>• willingness to engage in a relationship</li> <li>• operational performance</li> <li>• group identity</li> <li>• issues were “worked out” previously</li> <li>• Successful project</li> <li>• Technical intensive project</li> </ul>	<ul style="list-style-type: none"> <li>• team-based problem-solving</li> <li>• Team ability to expedite work</li> <li>• trust among team members</li> <li>• Good team planning</li> <li>• No coordination losses between team members</li> <li>• Previous experience working together</li> <li>• team is perceived to be cohesive</li> <li>• knowledgeable member in a team</li> <li>• facilitates amount and quality of information exchanged</li> </ul>

The researcher asked for explanations on how the experience factor influenced the project outcome and made this project case as a high performance project. Based on the interviewees' answers, the researcher assumed that team industry-specific experience might have been the factor. Having specific industrial experience might have enabled the team to possess

competencies necessary to execute a project on time and to the standard required. One interviewee stated:

- *Team members have strong technical skills as they are specialized in this type of work.* (Client Project Manager, C2-CL-IN1)

It might enable the team to make stronger plans to avoid standard deviations and to meet the standard. Case informants highlighted team experience was very important for the effectiveness and performance of a project; they mentioned:

- *The team experience was excellent, which enabled them to execute the project successfully and smoothly.* (Client Project Manager, C2-CL-IN1)
- *The team was very good and had many years of experience, as the company was specialized in this type of work.* (Consultant Project Manager, C2-CL-IN2)
- *The team is very strong with so many years of experience.* (Contractor Project Manager, C2-CL-IN3)
- *When a team has good experience that means their technical skill is high.* (Consultant Project Manager, C2-CL-IN2)
- *This is pure technical work so the project team's technical skill should be high and it was high.* (Contractor Project Manager, C2-CL-IN3)
- *Project leadership might contribute to success but not as much as team experience.* (Client Project Manager, C2-CL-IN1)

To be more specific, team effectiveness researchers have long noted that teamwork often involves interdependent tasks (Alzahrani and Emsley, 2013; Cooke-Davies, 2002; Duy et al. 2004; Easton and Rosenzweig, 2012), and that team-level factors may be important in overall team performance. One interviewee stated:

- *The team was so strong to drive the project by themselves.* (Consultant Project Manager, C2-CL-IN2)

Such factors include team-level performance strategies, coordination losses, team cohesiveness, experience working together, group identity, etc. (Hackman 2003; Hackman and Wageman, 2005; Choo et al. 2007a; Faraj and Sproull, 2000; Easton and Rosenzweig, 2012). In this case study, the

project team assigned might have had many years working together as stated below when the researcher asked questions related to the relationship and team experience factors:

- *Our team been together for a very long time and relationship between them is strong so we did not have any problem that could have affected the project.* (Contractor Project Manager, C2-CL-IN3)
- *The team was very good and had many years of experience as the company was specialized in this type of work.* (Consultant Project Manager, C2-CL-IN2)

When team members have worked together previously, it is reasonable to posit that coordination losses may be reduced and factors such as team cohesiveness may increase because any related issues will likely have been “worked out” previously (Banker et al. 2001; Huckman et al. 2009; Reagans et al. 2005; Tuckman 1977; and Easton and Rosenzweig, 2012). In this project case, the problem solving ability might have been high as stated below when the researcher asked questions related to the problem solving ability factor:

- *Due to team technical strength, they were able to solve technical issues and come up with an effective solution.* (Client Project Manager, C2-CL-IN1)
- *Yes. The problem solving skill was good specially with solving technical issue.* (Consultant Project Manager, C2-CL-IN2)

Prior experience working together might have also ensured that the most knowledgeable member for a particular team role is in fact assigned to that role (Faraj and Sproull, 2000; Liang et al. 1995) as stated below when the researcher asked questions related to the team structure factor:

- *The way the team was structured was good.* (Consultant Project Manager, C2-CL-IN2)
- *Every work was assigned to the member who is specialized and we had good number of people throughout.* (Contractor Project Manager, C2-CL-IN3)

Furthermore, such familiarity might have promoted trust among team members, which facilitates the amount and quality of information exchanged (Edmondson 1999; Lapre and Nembhard, 2011; Uzzi 1997) as stated below when the researcher asked questions related to the connection between team members factor:

- *Relationship between project team members looked very well which made project ran smoothly. (Consultant Project Manager, C2-CL-IN2)*
- *No issue was seen during project so I guess all were ok. (Consultant Project Manager, C2-CL-IN2)*
- *Our team been together for a very long time and relationship between them is strong so we did not have any problem that could have affected the project. (Contractor Project Manager, C2-CL-IN3)*

In line with Huckman et al. (2009) and Reagans et al. (2005), the team's familiarity with the industry for this project might have helped to meet the quality specified. This type of work is considered to be specialized and technical since team members have worked on it together prior to the current project. One of the case interviewees stated:

- *The team was very good and had many years of experience, as the company was specialized in this type of work. (Consultant Project Manager, C2-CL-IN2)*

Furthermore, following the same argument presented above on coordination losses and team effectiveness, due to the strong team familiarity factor, the team was able to expedite the work to compensate for the material delivery delay and therefore help in avoiding delay in handing over the project. Because of this fact, additional work outside the scope of the project was provided, as stated by the following:

- *Due to [the team] being highly skilled, new work for the screen of the treatment plant, which was outside the scope, was given to them as we found them a well-experienced team. (Client Project Manager, C2-CL-IN1)*

The below theme is an alternative explanation of the data found in this case.

#### **B. Individual Experience - (Theme 3)**

Appendix 2 contains the case study transcript along with interviews questions used. Table 5.6 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the individual experience theme for further discussion.

**Table 5.6: Final Coding for Individual Experience**

Final coding framework	Initial coding framework	
Individual Experience	<ul style="list-style-type: none"> <li>• project team is perceived to be strong</li> <li>• Action at the early stage</li> <li>• Scope increase</li> <li>• Experience with project-related activities</li> <li>• Build upon and learn from prior mistakes</li> <li>• mistakes in future improvement projects</li> </ul>	<ul style="list-style-type: none"> <li>• Problem solving ability perceived to be strong</li> <li>• Good team environment</li> <li>• knowledgeable member in the team</li> <li>• experience of individuals</li> <li>• more proficient individual</li> <li>• effective routines for project improvement</li> <li>• experience prior to the current project</li> <li>• proportional relation of experience and project success</li> </ul>

Whilst trying to explore other human intangible factors that influenced project success, the researcher asked the client PM interviewee about other human elements that contributed to the success of the project. The interviewee stated:

- *As far as the project went, they had a team in-house to carry out these activities and there was no need to appoint subcontractors.* (Client Project Manager, C2-CL-IN1)

The project team had its own teams dedicated for the project. Having cross-functional project teams might have helped in overcoming schedule slip and meeting the quality of the project. According to Boomer et al. (2002), for complex or large projects, such as the case of this project (AED 44,904,258), the utilization of a full-time, autonomous, and empowered core project team may contribute to the delivery of projects on time and within budget. By looking at the approved organization chart for this project, there is an indication of an autonomous project team that consisted of specialist members working under the sole charge of project manager who might have managed to execute the project within the quality goals standards and a reasonable duration. One Interviewee stated:

- *Every work was assigned to the member who is specialized and we had good number of people throughout.* (Contractor Project Manager, C2-CL-IN3)

This indicates the role of experience, and particularly, the experience that individuals have including the project team leader. Experience that will lead to project success is more important

than general experience, especially when different skill sets of various team members are required (Easton and Rosenzweig, 2012). For example, Huckman et al. (2009) noted a difference between the skills required by different team members. For example the skills that are necessary for the project manager to motivate software development team members and to interact with customers is rather different than the skills a programmer needs to write code. These differences modify the relationship between experience and work team performance. Considering this case study, where project team members share many of the same duties, for the team leader the situation is different since they have to have some additional responsibilities such as (a) obtaining adequate resources; (b) selecting projects and recruiting team members; (c) structuring, allocating, and coordinating work among team members; (d) motivating team members and creating an environment of psychological safety; (e) facilitating use of the problem-solving process; (f) monitoring progress; and (g) dealing with problems as they arise over the course of the project (Anand et al. 2010; Chakravorty 2010; Choo et al. 2007a; Edmondson 2012; Haas 2006; Linderman et al. 2003; Nair et al. 2011; Schroeder et al. 2008). It is expected that together with the individual's experience growth, project success will follow as well. Moreover, some aspects of individual experience such as problem-solving methodology, creating process improvement plans, implementing tracking systems, etc. can be highlighted in this study. Experience with mentioned project-related actions affords to individuals learning from previously made mistakes, and this decreases the possibility of making the same mistakes in future improvement projects (Argote 1999; Haas 2006). This experience will lead to effective routines developments for successfully completing improvement projects (Huckman and Pisano, 2006; Huckman et al. 2009; Lapre and Nembhard, 2011; Pisano et al. 2001; Reagans et al. 2005; Shafer et al. 2001). Evidence in this case shows more proficiency to develop effective routines for successfully completing projects when the schedule slipped as stated below when the researcher asked questions related to the problem solving ability factor:

- *The contractor was good in expediting the work to compensate for the delay of materials arriving in the country.* (Client Project Manager, C2-CL-IN1)

This finding is supported by:

- *The team was so strong to drive the project by themselves.* (Consultant Project Manager, C2-CL-IN2).

Therefore, the cause of the slight project delay noticed might be out of the team's control, as stated by the interviewee:

- *Firstly, it met the requirements and scope so the project met the quality goals. Secondly, variation orders were added due to an unexpected reason as we discussed for the concrete tank repair, which increased the acid. Thirdly, the highly skilled new work for the screen of the treatment plant, which was outside the scope, was given to them as we found them a well-experienced team. (Client Project Manager, C2-CL-IN1).*

The below theme is also an alternative explanation of the data found in this case.

#### C. **Organization Experience - (Theme 4)**

Appendix 2 contains the case study transcript along with interviews questions used. Table 5.7 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the organization experience theme for further discussion.

**Table 5.7: Final Coding for Organization Experience**

Final coding framework	Initial coding framework	
Organization Experience	<ul style="list-style-type: none"> <li>• project team is perceived to be strong</li> <li>• Knowledge sharing</li> <li>• Knowledge generated by other members</li> <li>• organizational memory</li> <li>• task-related information and knowledge</li> <li>• access to prior project-related materials</li> <li>• documented learning</li> <li>• project database for experts opinion on issue</li> </ul>	<ul style="list-style-type: none"> <li>• Problem solving ability is perceived to be strong</li> <li>• Team is perceived to have specialist members</li> <li>• previous long experience</li> <li>• training is perceived to be strong</li> <li>• access to organizational experience</li> <li>• Better sense to what works and what does not</li> <li>• team receptive to improvement</li> <li>• Organizational experience grows, individuals opportunities for to benefit from knowledge accumulated from others increase</li> </ul>

According to Anand et al. (2010), Fiol and Lyles (1985), Lapre and Nembhard (2011), and Reagans et al. (2005), individuals in the project team may benefit from knowledge generated by other members of the organization. This knowledge sharing needs good relationship and connection



between team members as shown in this project case when the researcher was trying to find answer to research question related to social capital. Interviewees stated:

- *Relationship between project team members looked very well which made project ran smoothly.* (Client Project Manager, C2-CL-IN1)
- *No issue was seen during project so I guess all were ok.* (Client Project Manager, C2-CL-IN1)
- *Our team been together for a very long time and relationship between them is strong so we did not have any problem that could have affected the project.* (Contractor Project Manager, C2-CL-IN3)

Connection between team members improves the capacities for the sharing, creation and management of knowledge. It also helps in solving conflict within organizations, integrating tacit knowledge and speeding up the learning process (Connell and Voola, 2013). However, the data obtained may not necessary mean that the connection between team members is the only factor to influence knowledge sharing. This is because the social capital level may include sum of resources accumulated in the organization such as experience. This type of experience is referred to as organizational experience (Anand et al. 2010; Fiol and Lyles, 1985; Lapre and Nembhard, 2011; Reagans et al. 2005). The archived project documentation can provide an organizational memory of, both “soft” and “hard” task-related knowledge and information (Faraj and Sproull, 2000; Haas 2006; Huber 1991; Kim 1993; Yao et al. 2012). In this project case, such a database might have been available since the contractor had so many years of experience in such a technically intensive and specialized work as stated by interviewees:

- *The team was very good and had many years of experience, as the company was specialized in this type of work.* (Consultant Project Manager, C2-CL-IN2)
- *This is a pure technical work so the project team technical skill should be high and it was high.* (Contractor Project Manager, C2-CL-IN3)
- *We give good amount of technical training to our team to develop their technical skill. We give specialized training with manufacturers we deal with.* (Contractor Project Manager, C2-CL-IN3)

Therefore, project team members might have been able to readily access and make good use of a variety of prior project-related materials, such as project planning documents, documented learning, detailed description of analyses conducted, etc. For instance, one of the different project reports prompts teams to document the key learning to date, including areas outside the scope of

the current project so the knowledge gained can be readily applied. With regards to the soft information, project team members can access the project database to find expert opinions with respect to a particular issue. Therefore, such access to the organizational experience, the assigned project team members might have had a better sense as to what did not work and what worked, and as a result, they did not have to experiment with different possible routines (Reagans et al. 2005). This was felt from the evidence related to the team ability to solve problem as stated below:

- *Due to the team's technical strength, it was able to solve technical issues and come up with an effective solution.* (Client Project Manager, C2-CL-IN1)
- *Yes. The problem-solving skills were good, especially with solving technical issues.* (Consultant Project Manager, C2-CL-IN2)
- *The more experience you have, the stronger your skills will be to solve problems, which was the case in this project and all other projects we take with regards to the SBR tank dimension issue.* (Contractor Project Manager, C2-CL-IN3)

In conclusion, as organizational experience grows, the opportunities for individuals to benefit from knowledge accumulated from others also grow. Concurrently, organizations may tend to have worked out the “bugs” related to training, and often have project team members who are receptive to the improvement process (Benner and Tushman, 2002; Reagans et al. 2005; Upton and Kim, 1998). Two interviewees stated:

- *We give good amount of technical training to our team to develop their technical skill.* (Contractor Project Manager, C2-CL-IN3)
- *Strong technical competencies developed maybe due to good training. The Team was effective.* (Client Project Manager, C2-CL-IN1)

Therefore, it is expected that the levels of available overall knowledge coming from prior projects conducted correspond to increasing project success. One interviewee stated:

- *Doing so many projects with the same nature is actually a good hand on training.* (Consultant Project Manager, C2-CL-IN2)

In this case study, organizational experience for the assigned contractor might have been strong due to the facts that the contractor had previous long experience working on similar specialized highly technical projects. One of the interviewees stated:

- *The team [the contractor] was very good and had many years of experience, as the company was specialized in this type of work.* (Consultant Project Manager, C2-CL-IN2)

Furthermore, this case gave evidence that relationship with governmental entities was good when the research was trying to find explanation to research question 3 on the relationship capital. Interviewees stated:

- *Team might have previous relationship with governmental entities.* (Client Project Manager, C2-CL-IN1)
- *Strong relations with related governmental entities avoided delays.* (Consultant Project Manager, C2-CL-IN2)

As discussed above, while acknowledging that relationships with entities directly associated with the project is needed to speed up the process and avoid delays (Ning and Ling, 2013), the data obtained may not necessary mean that it is the only factor related to the creation, maintenance and extension of the external relationships of a firm. This is because there might be an element of human capital such as organization experience. The long years of experience of the organization might have also helped the project team in developing better relationship with stakeholders. The below theme is also an alternative explanation of the data found in this case.

#### **A. Motivation Misalignment - (Theme 5)**

Appendix 2 contains the case study transcript along with interviews questions used. Table 5.8 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the motivation misalignment theme for further discussion.

**Table 5.8: Final Coding for Motivation Misalignment**

Final coding framework	Initial coding framework	
Motivation Misalignment	<ul style="list-style-type: none"> <li>• learning ability is perceived to be strong</li> <li>• Team is perceived motivated</li> <li>• team efficacy/potency is perceived to be strong</li> <li>• rational behaviour and cooperation are perceived to be strong</li> <li>• performance-based incentive mechanism available</li> <li>• above business-as-usual achieved</li> <li>• just risk allocation</li> <li>• No procurement approaches to promote motivation</li> <li>• Alignment of motivation to project objectives</li> </ul>	<ul style="list-style-type: none"> <li>• Problem solving ability is perceived to be strong</li> <li>• Successful project</li> <li>• management support is perceived to be strong</li> <li>• consistency between the project performance goals and incentive goals</li> <li>• fair and flexible incentive</li> <li>• performance measurement processes</li> <li>• Interactional justice and reciprocity</li> <li>• performance-enhancing initiatives</li> <li>• Goal commitment</li> </ul>

Whilst trying to explore other intangible factors that influenced project success, the researcher asked the three interviewees about team motivation and its influence on the success of the project. Interviewees stated that:

- *Team seems to be motivated to successfully complete the work on time. This was felt from their communication with us.* (Client Project Manager, C2-CL-IN1)
- *Team was motivated.* (Consultant Project Manager, C2-CL-IN2)

Therefore, to be effective in a project, the project team believed to be motivated to take action proactively and promptly with regards to problem solving as per the statements made by the three interviewees. This team motivation could have positively affected the team performance when they had to expedite the work after the schedule slip.

- *The contractor was good in expediting the work to compensate for the delay of materials arriving in the country.* (Client Project Manager, C2-CL-IN1)

Having large and complex construction, projects similar to this case study project, are regularly very risky due to a high level of technical uncertainty. Total costs are affected by a wide range of unpredicted risks (Olsen and Osmundsen, 2005). Thus, in order to stimulate motivation and steer

effort towards contractor objectives effectively, a specific approach must be designed where project team will be motivated and safeguard risks will be eliminated in advance. This approach is present in this case as stated by one of the interviewees:

- *Our team was motivated throughout the project and we gave appreciation letters and incentives.* (Contractor Project Manager, C2-CL-IN3)

A key objective of an effective strategy is the alignment of the project participants' effort to project goals. Turner (2004, p. 76) states that the approach should be designed to: encourage the contractor project team members to act rationally to achieve common objectives, and the best outcome within the expected risk. Project risk, therefore, should be allocated and managed according to its ability to promote rational behaviour and cooperation. Many projects, particularly those that utilize a performance-based incentive mechanism, specify higher-order objectives and provide the project team the voluntary option to strive for these goals (Rose and Manley, 2010). Without incentivization and a perception by participants that they can control the project risks associated with goal achievement, a failure to achieve such goals is likely.

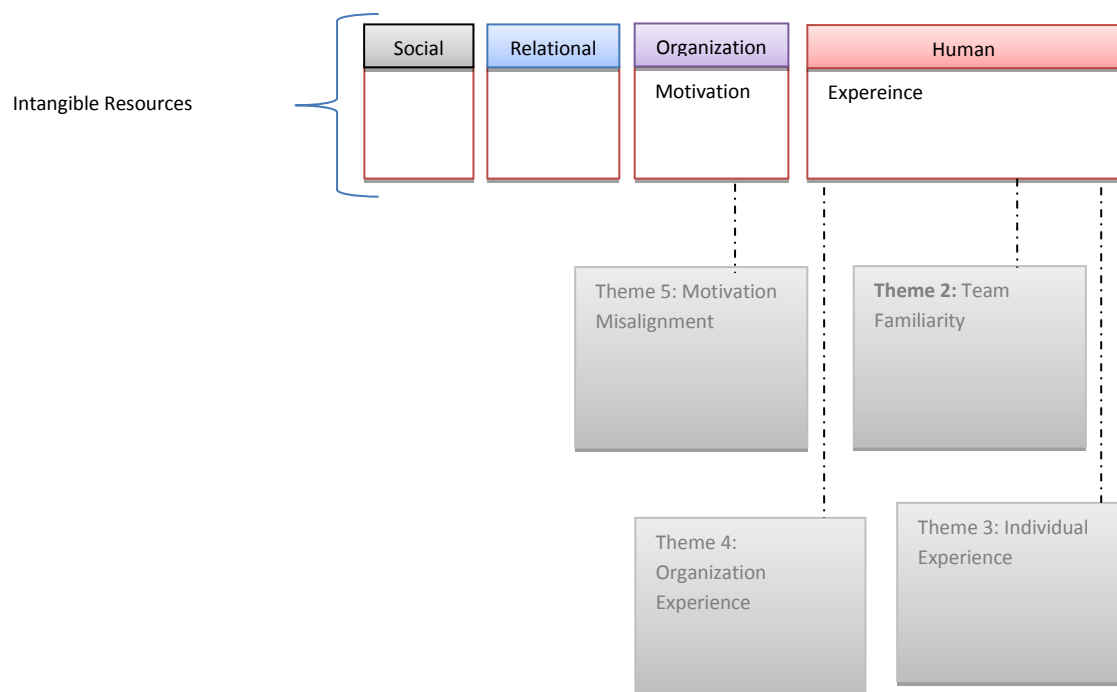
### 5.3.3 Conclusion

The analysis of this case revealed some initial findings and themes that may be carried forward to the rest of cases. The themes that could be confirmed through multiple sources need to be validated further by the other cases in order to provide a good basis for answer for **Research Question 1** and **Research Question 2**, and for the theoretical framework. Regarding the other factors influencing the project outcome such as those related to relationship and social capitals, themes were not generated in the within case analysis due to limited evidence and alight responses related to themes presented in the within case. However, there are presented in the cross-case chapter 6 as this phase allowed the researcher to look at the data through multiple lenses

The most interesting finding in this case was that the team familiarity factor. This theme needs to be observed carefully in the following cases. Regarding the other factors influencing the project outcome, there were the individual experience, the organization experience, and the motivation misalignment factors, and these also need to be validated through other cases. Figure 5.3 displays the finding of this case in a contextual framework as part of the development of the overall conceptual model. For Theme 1 (Leadership Industry-Specific Experience) found in the previous

case, it seems that Theme 3 (Individual Experience) may validate it but this has to be analyzed further during the following case study. The next section is the analysis of case 3, which is a project for the construction of sewerage connections and related works for isolated properties in Abu Dhabi Island and Mainland. Themes found in case 1 and 2 need to be observed carefully in the following case and factors related to other categories of Intangible resources (relational and social) should be focused on.

**Figure 5.3: Case 2 Framework.**



## 5.4 Case Study 3 (Project 1185)

This case study was a work order-based project that included the construction of sewerage connections and related works for isolated properties in Abu Dhabi Island and Mainland under Contract No. 0-1185. It was awarded to a local contracting company (Al Jabir). This project was their first in the sewerage industry. The overall cost of the project was AED 180,000,000. The construction phase of the contract was 911 days in duration from the letter of award. This case study was selected based on the cost and schedule index and categorised as one of the low performing projects. Similar to the previous case, data were collected using two instruments

(semi-structured interviews and supporting documents). One lengthy semi-structured interview was first conducted with the client project manager whose contact detail was obtained from the progress meetings reports. Following that, two semi-structured interviews were carried out with the assigned consultant and contractor project managers. Their contact details were also obtained from the progress meeting reports. Table 5.9 includes general information about the project, interviews, and interviewees as well as the research method.

**Table 5.9: Case General Information (Project 1185)**

Project	Client	Consultant	Contractor	Project Value
Construction of sewerage connections in Abu Dhabi Island and Mainland - Phase 1	ADSSC	Dorsch	Al Jabir	AED 180,000,000
Project Start Date	Project End Date	Methodology	Collection Method	Instruments
28 May 2008	28 Nov 2010	Case Study	Supporting Document and Interviews	Semi-structured, open-ended, direct/indirect, formal supporting document
Interviewee Codes	Role in Project	Interview Type	Interview Duration	Location
Client Project Manager, C2-CL-IN1	Project Manager (Client)	Semi-structured	50 min	ADSSC Headquarter
Consultant Project Manager, C2-CL-IN2	Project Manager (Consultant)	Semi-structured	25 min	Phone
Contractor Project Manager, C2-CL-IN3	Project Manager (Contractor)	Semi-structured	25 min	Phone

#### 5.4.1 Project Overview

This project is a work order-based project that includes the construction of sewerage connections and related works for isolated properties in Abu Dhabi Island and Mainland under Contract No. 0-1185.

The project was awarded to a local company at an overall cost of 180 million (UAE Dirham). The duration of the project was 911 days (30 months and 12 months warranty period) from the date of the award letter. The commencement date was 28 May 2008 and the contract completion date was 28 November 2010.

The sites were handed over to the contractor on 28 May 2008 in accordance with the contract. After the 30-day mobilization period elapsed on 28 June 2008, no major activities had been completed and even the official proposal for the site office location had not been submitted. This could be due to the factors related to low industry-specific experience , weak team planning ability, action at the late stage, low team motivation, unavailability of a performance-based incentive mechanism, late contractor involvement, inconsistency between the project performance goals and incentive goals, and weak management to review plan.

Due to the factors related to weak team planning ability, low industry-specific experience, high technical intensive project, and unavailability of proficient individuals, the project outcome might have been influenced. For example, when 69% of the project time had elapsed, the contractor's performance was identified as slow and no significant progress was noticed, since the actual progress was 20%, compared with the planned progress of 50%. Therefore, the contractor was asked to submit a recovery plan to address the slow progress. Furthermore, the Quality Assurance/Quality Control (QA/QC) plan submitted by the contractor was rejected; therefore the contractor was asked to resubmit.

After 73% of the contract period had elapsed, the contractor made an urgent request for the ADSSC to obtain permission from the road department authority, because third parties such as a municipality's traffic and Department of Transport (POT) provide permits late, which can affect the project negatively. This could be due to the factors related to weak relationship, weak risk management, and weak management to facilitate problems.

On December 2010, the work progress was assessed as slow, because the actual progress on site was only around 46%. The number of work orders with over-run days was 273 and only 124 properties had been handed over. As a result, a special meeting was held and the contractor was informed that the accumulating delays to the contract meant that the contract time had already elapsed on 28 November 2010; therefore, the contractor would be required to complete only the work orders in advance progress status. This could be due to the factors discussed below related to team familiarity, individual experience, organization experience, motivation misalignment , top management support, and knowledge sharing.



### **5.4.2 Findings and Discussion**

The findings of this case provided explanations to three research questions of the study and revealed five factors leading to the project's success. The interesting finding was that the three types of experience factor that might have a strong influence on the project outcome found in the previous case were also found in this project case. These three factors have the potential to provide more evidence to research question 1. Additionally, another interesting finding was that the motivation factor that might have a strong influence on the project outcome found in previous case was also found in this project case. This factor along with the top management support factor found in this case have the potential to provide a good explanation to research question 2. Moreover, the connection between team members factor found in the literature has led to the knowledge sharing factor that might have a strong influence on the project outcome. This factor has the potential to provide a good explanation to research question 4 of the study.

The researcher discussed the research evidence comprising the influencing factors and quotes from the case study research, and the themes were presented as the following for further processing in the next phases.

#### **A. Team Familiarity - (*Theme 2*)**

Appendix 2 contains the case study transcript along with interviews questions used. Table 5.10 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the team familiarity theme for further discussion.

**Table 5.10: Final Coding for Team Familiarity**

Final coding framework	Initial coding framework	
Team Familiarity	<ul style="list-style-type: none"> <li>• Team is perceived to have low industry-specific experience</li> <li>• Technical intensive project</li> <li>• Unsuccessful project</li> <li>• No group identity</li> <li>• issues might not “worked out” previously</li> <li>• not able to facilitate amount and quality of information exchanged</li> <li>• No knowledgeable member in the team</li> </ul>	<ul style="list-style-type: none"> <li>• weak team-based problem-solving</li> <li>• team not able to expedite the work</li> <li>• No trust among team members</li> <li>• team structure is previewed weak</li> <li>• Weak team planning ability</li> <li>• coordination losses between team members</li> <li>• No Previous experience working together</li> <li>• team is perceived not to be cohesive</li> </ul>

When the researcher attempted to find explanation for research question 1 regarding how human capital intangible resources influence project success, the researcher asked the three interviewees how the experience of the assigned project team influenced the overall outcome of the project as stated in the progress meeting report:

- *DC stated that due to the lack of experience of the foreman and skilled labours, there is no significant progress. (Case 3-Progress Meeting 34)*
- *ADSSC/DC displayed their concern that a large number of work orders are still pending and suggested the contractor should devote experienced gangs to only focus on those pending work orders. (Case 3-Progress Meeting 26)*

One interviewee stated the following:

- *It was clear that the team assigned for this project did not have enough experience; the team technically was weak on sewerage projects; the team experience was bad and therefore output and productivity was low; we had to conduct many progress meetings and give guidelines on planning, but the problem is that they could not understand our guidelines and recommendations and their feedback was weak; the team was not qualified enough to take a project in the sewerage industry. (Client PM, C3-CL-IN1)*

Based on the above findings, the researcher observed that team experience might have not helped in developing the technical competencies necessary to operate and carry out the project effectively, such as meeting technical standards. Thus, team experience relates to performance and can impact the outcomes of projects. It was found in this case (as with case 1) that team industry-specific experience might have negatively influenced project success. Having industry-specific experience might have enabled the team to possess competencies necessary to execute a project on time and to the standard required. Industry-specific experience might have enabled the team to execute stronger planning to avoid deviation from the standard required. Evidence of this case shows that the team's lack of industry-specific experience might have been an issue, because it might have affected project performance as well as the planning capability of the team to meet the standard required (quality) for each work order and then be able to handover on time and according to the plan, as can be clearly seen from the following statements made:

- *ADSSC/DC displayed their concern that a large number of work orders are still pending and suggested the contractor should devote experienced gangs to only focus on those pending work orders. (Case 3-Progress Meeting 26)*
- *ADSSC asked the contractor to submit a recovery plan due to the slow progress. (Case 3-Progress Meeting 14)*
- *DC stated that deviations from the standard and specified quality are re-ordered frequently. The contractor was notified that a repair needs to take place. (Case 3-Progress Meeting 44)*
- *DC stated that due to the lack of an experience foreman and skilled labours, there is no significant progress. (Case 3-Progress Meeting 34)*

However, following the same “experience working together” analysis done in case 2 but with opposing results, it is interesting to assume that the assigned project team members may have been new to each other as indicated by these two statements:

- *All of the team members were new to the sewerage industry and had little experience. The management wanted to go into this industry so this was our first project. (Contractor PM, C3-CL-IN3)*

- *It was felt that the connection between the members was not so good and that made a tense environment which indirectly effected the project progress. (Consultant PM, C3-CL-IN2)*

Following the same argument presented in case 2, in any given work environment, it is important for the employees to work together in teams. Working in teams frequently ensures there are fewer coordination losses in future projects by enhancing team cohesiveness (Banker et al. 2001; Huckman et al. 2009; Reagans et al. 2005; Tuckman 1977; Huckman et al. 2009). It is also important to realize the benefits of team work go beyond the current project. Individuals who have worked together in previous team members are more cohesive since they might have ironed out their differences in their previous teams. However, in our project, these benefits were not attainable as stated below when the researcher asked questions related to the internal control factor:

- *It took so much effort from us to make them aligned to the internal control process as their people were not qualified enough for this project. (Client PM, C3-CL-IN1)*

As argued in case 2, working in team frequently is critical in the assigning of tasks. It is because it provides the individuals with prior team experience and the knowledgeable team members from the previous teams to be assigned certain specific roles. The role assignment is meant to assign individuals to the role which they are qualified for and can deliver excellent results based on past experience (Faraj and Sproull, 2000; Liang et al. 1995). In this case, it was not possible as outlined in one of the progress meeting reports:

- *DC stated that due to the lack of an experience foreman and skilled labours, there is no significant progress. (Case 3-Progress Meeting 34)*

Following the argument presented in case 2, previous team work experience also plays a critical role in promoting trust among the team members. Team members from previous case were familiar with each other, which is critical in boosting trust and facilitating the quantity and quality of shared information among the team (Edmondson 1999; Lapre and Nembhard, 2011; Uzzi 1997). However, it is critical to note that trust among the team members may affect the team adversely as stated below when the researcher asked questions related to the team connection factor at the social capital level:

- *The factor that may affect the project negatively is social relationship among the team.* (Client PM, C3-CL-IN1)
- *It was felt that the connection between the members was not so good and that made a tense environment which indirectly effected the project progress.* (Contractor PM, C3-CL-IN3)

Therefore, these finding echoes the findings of Reagans et al. (2005) and Huckman et al. (2009), which suggested that weaker team familiarity (team working together) could negatively affect the project outcome.

#### **B. Individual Experience - (Theme 3)**

Appendix 2 contains the case study transcript along with interviews questions used.

Table 5.11 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the individual experience theme for further discussion.

**Table 5.11: Final Coding for Individual Experience**

Final coding framework	Initial coding framework	
Individual Experience	<ul style="list-style-type: none"> <li>• project team is perceived to be weak</li> <li>• Action at the late stage</li> <li>• Project Manager is perceived to be weak</li> <li>• No experience with project-related activities</li> <li>• No Build upon and learn from prior mistakes</li> <li>• mistakes in future improvement projects</li> </ul>	<ul style="list-style-type: none"> <li>• Problem solving ability perceived to be weak</li> <li>• No knowledgeable member in the team</li> <li>• No specialist members</li> <li>• No experience of individuals</li> <li>• No proficient individual</li> <li>• effective routines for project improvement</li> <li>• no experience prior to the current project</li> <li>• proportional relation of experience and project success</li> </ul>

As an alternative explanation of the data found in this case, the findings of the case indicate that other than team familiarity, an individual's experience is also important to the success of a project. The experience of the project leader is especially important since they are in charge of the team and the project. It is because the team leader is faced with different situations and is required to have vast experience to handle many of the responsibilities assigned to the team manager. Some

of the responsibilities assigned to the project team leader as well include selecting the projects as mobilizing the required resources. The project team leader also recruits team members, as well as structures, allocates, and coordinates work among the team members. Once the project has begun, the project team leader also monitors the progress of the project, deals with the challenges within the project, facilitates the use problem solving processes, and motivates the employees (Anand et al. 2010; Chakravorty 2010; Choo et al. 2007a; Edmondson 2012; Haas 2006; Linderman et al. 2003; Nair et al. 2011; Schroeder et al. 2008). In this case, six out of these seven listed responsibilities might not have been carried out effectively by the assigned contractor project manager as stated below:

- *It was clear that the team assigned for this project did not have enough experience. (Client PM, C3-CL-IN1)*
- *It was not so good. They used to just raise the problem and not trying to solve and that is it. For example, they will raise problem for any major or minor activities such as excavation. (Client PM, C3-CL-IN1)*
- *Not motivated. They gave us problems all the time. We really suffered a lot in this project from these human factors. (Client PM, C3-CL-IN1)*
- *It took so much effort from us to make them aligned to the internal control process as their people were not qualified enough for this project. (Client PM, C3-CL-IN1)*

It is expected that a project leader will get better at such aspects of team leadership with growing experience in this role. The assigned team leader might have lacked this experience as stated below as stated below when the researcher asked questions related to the team leadership factor:

- *The factors that may affected the project negatively is strong leadership was weak. (Client PM, C3-CL-IN1)*

Therefore, on average, as an individual's experience increases, it is expected that the likelihood of project to succeed will increase. Additionally, aspects of individual experience in the context of this case might be in the form of creating process improvement plans, problem-solving methodology, implementing tracking systems, etc. These aspects might have not been strong in this project case as stated below when the researcher asked questions related to the problem solving ability, motivation, planning ability and internal control factors:

- *The problem solving ability was an issue. (Client PM, C3-CL-IN1)*

- *The team does not seem to be motivated to learn so they improve in next project.* (Consultant PM, C3-CL-IN2)
- *Their experience was affecting their planning ability.* (Consultant PM, C3-CL-IN2)
- *It took so much effort from us to make them aligned to the internal control process as their people were not qualified enough for this project.* (Client PM, C3-CL-IN1)

As argued in case 2, a project team leader's individual experience is important since it forms the basis for future growth. The project manager has the opportunity to learn from previous mistakes which reduce the chances of making the same mistakes in the future projects (Argote 1999; Haas 2006). The project team leader's individual experience in every project should improve the project team leader's routines and knowledge which ensure the projects improvement (Huckman and Pisano, 2006; Huckman et al. 2009; Lapre and Nembhard, 2011; Pisano et al. 2001; Reagans et al. 2005; Shafer et al. 2001). The findings of the case reveal that the individual experience level might have been low resulting in a lower project performance as stated below when the researcher asked questions related to the team experience and leadership factors:

- *The project manager was not qualified and his team was not qualified.* (Client PM, C3-CL-IN1)
- *The team responsible for the hands on work was weak and were not good enough to work.* (Consultant PM, C3-CL-IN2)
- *All of the team members were new to the sewerage industry and had little experience. The management wanted to go into this industry so this was our first project.* (Contractor PM, C2-CL-IN3)

The below theme is also an alternative explanation of the data found in this case.

### **C. Organization Experience - (Theme 4)**

Appendix 2 contains the case study transcript along with interviews questions used.

Table 5.12 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the organization experience theme for further discussion.

**Table 5.12: Final Coding for Organization Experience**

Final coding framework	Initial coding framework	
Organization Experience	<ul style="list-style-type: none"> <li>• project team is perceived to be weak</li> <li>• Knowledge sharing is weak</li> <li>• Knowledge generated by other members is weak</li> <li>• organizational memory</li> <li>• task-related information and knowledge</li> <li>• access to prior project-related materials is weak</li> <li>• documented learning not available</li> <li>• No project database for experts opinion on issue</li> </ul>	<ul style="list-style-type: none"> <li>• Problem solving ability is perceived to be weak</li> <li>• Team is perceived not to have specialist members</li> <li>• No previous long experience</li> <li>• No access to organizational experience</li> <li>• No sense to what works and what does not</li> <li>• team not receptive to improvement</li> <li>• Organizational experience grows, individuals opportunities for to benefit from knowledge accumulated from others increase</li> </ul>

Based on an alternative explanation of the data found, the third factor that has a strong influence on the outcome of a project is organizational experience. The experienced acquired by individuals within an organization forms the basis of the organizational experience. The individuals within the organization should develop routines and habits to ensure the success of projects in the future (Anand et al. 2010; Fiol and Lyles, 1985; Lapre and Nembhard, 2011; Reagans et al. 2005). Ideally, the knowledge generated within an organization should be shared among the members of that organization. The extent to which the members within a team benefit from the knowledge base from other team members depends on good communications and interpersonal relationships within the team as stated below when the researcher asked questions related to social and relationship capitals:

- *The factor that may affect the project negatively is social relationship among the team.* (Client PM, C3-CL-IN1)
- *It was felt that the connection between the members was not so good and that made a tense environment which indirectly effected the project progress.* (Consultant PM, C3-CL-IN2)



As presented in case 2, the shared experience and knowledge within an organization is referred to as organizational experience (Anand et al. 2010; Fiol and Lyles, 1985; Lapre and Nembhard, 2011; Reagans et al. 2005). For instance, archived project documentation can provide organizational memory of task-related knowledge and information in both 'soft' and 'hard' formats (Anand et al. 2010; Fiol and Lyles, 1985; Lapre and Nembhard, 2011; Reagans et al. 2005). In this case, archived project documentation might have been available since the assigned contractor had previous work experience, and was relatively familiar with technically intensive and specialized work as stated below when the researcher asked questions related to the experience factor:

- *They did not have previous experience in the sewerage so they lacked the technical competencies.* (Consultant PM, C3-CL-IN2)
- *All of the team members were new to the sewerage industry and had little experience. The management wanted to go into this industry so this was our first project.* (Contractor PM, C2-CL-IN3)
- *As I mentioned, this was our first project and the team needed more similar project to build their competency and skill.* (Contractor PM, C2-CL-IN3)
- *Because Al Jabir contracting company project in the sewerage industry is little.* (Client PM, C3-CL-IN1)

Similar to the argument discussed in previous project case, project team members might have not been able to readily access and make good use of a variety of prior project-related materials, such as project planning documents, documented learning, detailed description of analyses conducted, etc. For instance, one of the different project reports prompts teams to document the key learning to date, including areas outside the scope of the current project so the knowledge gained can be readily applied. With regards to the soft information, project team members can access the project database to find expert opinions with respect to a particular issue. Therefore, with such lack of access to the organizational experience, the assigned project team members might not have had a better sense as to what did not work and what worked, and as a result, they might have to experiment with different possible routines (Reagans et al. 2005). This was felt from the evidence related to the team ability to solve problem as stated below when the researcher asked questions related to the problem solving factor:

- *The problem solving ability was an issue.* (Client PM, C3-CL-IN1)

- *It [problem solving] was not so good. They used to just raise the problem and not trying to solve and that is it. For example, they will raise problem for any major or minor activities such as excavation. (Client PM, C3-CL-IN1)*
- *They were not motivated to solve problem. (Consultant PM, C3-CL-IN2)*

Following the same argument presented in case 2, as the organization grows, there are might be opportunities for individual team members to learn from the experiences and knowledge accrued by others within the organization. Organizational experience can also allow the organization to remove some of the ‘bugs’ related to training, and also develop projects team members who embrace the improvement process within the organization (Benner and Tushman, 2002; Reagans et al. 2005; Upton and Kim, 1998). In this case, the low project performance might have been as a result of the low level organizational experience. One of the interviewees stated:

- *They did not have previous experience of sewerage so they lacked the technical competencies. (Consultant PM, C2-CL-IN2)*

The below theme is also an alternative explanation of the data found in this case.

#### **A. Motivation Misalignment - (Theme 5)**

Appendix 2 contains the case study transcript along with interviews questions used. Table 5.13 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the motivation misalignment theme for further discussion.

**Table 5.13: Final Coding for Motivation Misalignment**

Final coding framework	Initial coding framework	
Motivation Misalignment	<ul style="list-style-type: none"> <li>• learning ability is perceived to be weak</li> <li>• Team is perceived not motivated</li> <li>• team efficacy/potency is perceived to be weak</li> <li>• rational behaviour and cooperation are perceived to be weak</li> <li>• performance-based incentive mechanism unavailable</li> <li>• above business-as-usual not achieved</li> <li>• unjust risk allocation</li> <li>• No procurement approaches to promote motivation</li> <li>• No performance-enhancing initiatives</li> <li>• Goal commitment</li> </ul>	<ul style="list-style-type: none"> <li>• Problem solving ability is perceived to be weak</li> <li>• Unsuccessful project</li> <li>• management support is perceived to be weak</li> <li>• Bank guarantee</li> <li>• Inequitable risk profile</li> <li>• Late contractor involvement</li> <li>• Inconsistency between the project performance goals and incentive goals</li> <li>• Unfair and inflexible incentive performance measurement processes</li> <li>• Inadequate price negotiation</li> <li>• Interactional justice and reciprocity</li> </ul>

Whilst trying to confirm one of the human intangible factors found in the previous cases that influenced project success, the researcher asked the three interviewees about presence of team motivation and its influence on the success of the project. The interviewees stated:

- *Not motivated and they gave us problems all the time.* (Client PM, C3-CL-IN1)
- *The team does not seem to be motivated to learn so they could improve on the next project.* (Consultant PM, C3-CL-IN2)
- *Giving incentives to the team to learn could have improved their learning as they would be more motivated.* (Contractor PM, C3-CL-IN3)

Lack of team motivation might have affected the team's problem solving and ability to learn and handle project work orders without a delay, as concluded by the researcher when case informants stated:

- *The problem-solving ability was an issue. Problem solving was not good and they used to just raise the problem and not try to solve [them], and that is it! For example, they will raise problems for any major or minor activities, such as excavation. It is not there; they lack the basics and fundamentals so how can they be innovative? They did not show any*

*sign of developing themselves or even show good interest to actually complete the project. They all have taken training but we did not notice that while executing the project. They took a lot of our efforts to put them on track as far as ADSSC HSE standards and policy. It took much effort from us to make them aligned to the internal control process, as their people were not qualified enough for this project. (Client PM, C3-CL-IN1)*

These claims by the interviewee were confirmed from the following statements made in the progress meeting reports:

- *DC stated that AJES raised the problem very late considering the WO had been started more than one year; such obstructions should be highlighted at the time of seeing out. (Case 3-Progress Meeting 58)*
- *ADSSC/DC displayed their concern that no action has been taken yet with regards to the solution promised by the contractor to solve the sudden reduction of manpower. (Case 3-Progress Meeting 28)*

Based on the above findings, the researcher observed that project teams who are able to troubleshoot with quick solutions had a higher chance to solve operational and technical problems in a timely manner, which could greatly improve both the timing and quality of their projects. However, problem-solving ability requires a motivated team. Hence, this analysis showed the influence of motivational misalignment on accomplishment of business-as-usual (BAU) goals, informed by the motivational theory literature. Results in the case study showed that effectively aligning project participant motivation failure can have a harmful effect on project performance. One of the interviewees stated:

- *Giving incentive to the team to learn could have improved their learning as they will be more motivated to solve problems and issue. (Contractor PM, C2-CL-IN3)*

Additionally, we can see in this project case, that motivation towards the above BAU goals was critically impacted by specific aspects of the procurement approach that were not appropriate under the project settings. Rose and Manley (2010) presented BAU goals as follows:

1. The inability of the project team to control the financial incentive performance due to perceived inequitable contractual risk allocation
2. The late involvement of the managing contractor, who could otherwise have influenced design and construction cost risks

3. The inaccuracies in the guaranteed construction sum (GCS) price estimate due to tender submission time pressures and a hasty negotiation process resulting in a low expectancy of goal achievement and receiving the incentive reward
4. The misalignment between the project performance goals and the incentive goals resulting in a perception of procedural injustice and decreasing the expectancy of goal achievement
5. The absence of incentive performance measurement process under the project conditions.

The finding results suggest that the motivation of an assigned project contractor might be affected by a desire for justice and reciprocity that shape their perceptions of a financial incentive system and not only by no desire to maximize income and avoid project risk (Rose and Manley, 2010). This can be felt from the low support given by the contractor management to the project as stated below when the researcher asked questions related to the management support factor:

- *The home office support was very weak. (Client PM, C3-CL-IN1)*
- *The management could not do much with regarding of appointing experienced staff for the project. (Contractor PM, C3-CL-IN3)*
- *Being part of a huge company, there will be support by the management of course but it would take longer time due to the processes involved. (Contractor PM, C2-CL-IN3)*
- *But it [low performance] is mainly because of bad management. (Client PM, C3-CL-IN1)*
- *But the management was not there. (Client PM, C3-CL-IN1)*
- *The project manager was in fact good but the company did not give him the required support. (Client PM, C3-CL-IN1)*
- *The bank guarantee issue I consider it as bad management. (Client PM, C3-CL-IN1)*

Therefore, the main suggestion of this claim is that project clients should consider the potential effect of the psychological motives and their effects on actions in planning financial incentives as portion of a complete procurement strategy. Contractor and consultant team motivation in a built environment context can be predicted by using principles of motivation theories even though there is an individual nature of psychological motivation theories. This finding also provides evidence that top management support is not simply one of many factors needed for project success, but might be one of the most important critical success factors as discussed in the

following theme discussion. However, the below theme is also an alternative explanation of the data found in this case.

#### **B. Top Management Support - (Theme 6)**

Appendix 2 contains the case study transcript along with interviews questions used. Table 5.14 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the top management theme for further discussion.

**Table 5.14: Final Coding for Top Management Support**

Final coding framework	Initial coding framework	
Top Management Support	<ul style="list-style-type: none"> <li>• No performance-enhancing initiatives</li> <li>• team efficacy/potency is perceived to be weak</li> <li>• Risk management</li> <li>• Procurement strategy</li> <li>• Weak management to devote time</li> <li>• Weak management to review plan</li> <li>• Weak management to follow up on results</li> <li>• Weak management to facilitate problems</li> <li>• Management support is a critical success factor</li> </ul>	<ul style="list-style-type: none"> <li>• Problem solving ability is perceived to be weak</li> <li>• Team is perceived not to have specialist members</li> <li>• Unsuccessful project</li> <li>• management support is perceived to be weak</li> <li>• Bank guarantee</li> <li>• organization capital</li> <li>• relationship capital</li> <li>• realisation of benefits focus</li> </ul>

The researcher was trying to find explanations to research question 2 on how organizational capital intangible resources influence project success, and based on statements made in the progress meeting reports, the researcher questioned the three interviewees:

- *Top management is aware that experienced staff is required to do sewerage work, as they have no experience in sewerage network. (Case 3-Progress Meeting 41)*

The answers revealed that weak management support might have affected the outcome of the project. In fact, this evidence is repeated throughout the interviews, as it was one of the major factors contributing to the delay in project completion, as quoted below:

- *The home office support was very weak mainly because of bad management. But the management was not there. The team's experience and management were weak. The managerial support was weak. The factor that may affect the project negatively is management.* (Client PM, C3-CL-IN1)
- The management could not do much with regard to appointing experienced staff for the project. (Consultant PM, C3-CL-IN2)
- Being part of a huge company, there will be support by the management of course but it would take a longer time due to the processes involved. (Contractor PM, C3-CL-IN3)

Management support could have been an issue in this project case, because the management might have failed in aligning the human and financial resource elements, such as an experienced team capable of meeting the project needs. When one of the interviewees was asked to explain further how the management support affected the project outcome, he stated:

- *It is all about bad management plus they took a miscellaneous project in the sewerage system for which they had insufficient experience as all of their projects were in roads and bridges.* (Client PM, C3-CL-IN1)

Management support plays a prime role in the success of a project team by giving the required political backing and aligning the resource management systems (human, financial, and technological) with the needs of projects. The management might have failed to assign an experienced project manager at the start of the project, causing a four-month delay that affected the completion of a large number of work orders, as noticed in the progress meeting reports. Failure to provide an experienced team and ensure a continuous project team leader might have negatively affected the project, as explained in the above section. The management also might have failed to align the financial resource elements with the project needs, such as bank guarantees.

- *The bank guarantee issue I consider as bad management.* (Client PM, C2-CL-IN1)

The bank guarantee is an essential element and the team cannot start work without it. Therefore, this finding provides evidence that top management support is not simply one of many factors needed for project success, but might be the most important critical success factors as stated below:

- *But it is mainly because of bad management.* (Client PM, C3-CL-IN1)

- *But the management was not there.* (Client PM, C3-CL-IN1)
- *The home office support was very weak.* (Client PM, C3-CL-IN1)

Earlier suggestion is supporting the claim that top management support is a 'meta-factor' that incorporates other Critical Success Factors (CSFs) (Poon and Wagner, 2001). This is possibly a main result since it disproves the allowances recommended by Standish (1996) and by suggestion much of the present knowledge and practice. The findings show that the most important condition for project success such as competent, focussed and hardworking project staff received lower value. Project staff might play a very important role in project success or failure but if the minimum level of competency is recruited, then project success can be almost completely regulated by the quality of top management support as noted below:

- *But it is mainly because of bad management.* (Client PM, C3-CL-IN1)
- *The project manager was in fact good but the company did not give him the required support.* (Client PM, C3-CL-IN1)

In the results we can see that user involvement or high-level project planning represent important success factors as stated below by the project sponsor representative when the researcher asked questions related to the planning factor:

- *Planning was very weak.* (Client PM, C3-CL-IN1)

Planning capability is key success factor of a project as project teams with strong planning capability can produce a strong resource plan and a risk plan that can help with project speed and meet the project time need (Caughron and Mumford, 2008). However, the answer obtained may not necessary mean that there was an issue only at the project team level to recognize problems, formulate initial plans, refine their plans, and eventually implement those plans (Mumford et al. 2001). This is because organizational capital includes factors that surround employees and form the basis for development as well as usage of other intangible resources such as management support. This is because high-level planning seems to play an important role in project success if it reveals the motivations and beliefs of a project decision-making sponsor (Young and Poon, 2013). User involvement seems to be valuable in calling requirements, but their actual worth seems to be present when top managers use the procedure of meeting user requirements to accomplish expectations. Transparency of top management plays an important role in undertaking issues and



conflicts between diverse user priorities. Additionally, this finding does not accept project methodologies as the vital factor for project success as stated:

- *I do not see an effect of this factor [process optimization tool].* (Client PM, C3-CL-IN1)

Project methodologies are considered to be the most important (clear statement of requirements, proper planning, and smaller project milestones) by this finding that encounters the conventional wisdom. This finding gives support to the common senior management attitude that project management is not straight forward (Crawford 2005; Thomas et. al 2002). When we talk about implementation of the business process changes then the project methodologies appear to be of value, but they are imperfect because complexity makes it difficult to get ahead of the issues. Ability to change the plan to react to issues as they are realised is important rather than the plan. Understanding the above claims we can say that this is more a project governance issue than a project management one.

The below theme is also an alternative explanation of the data found in this case.

#### **A. Knowledge Sharing - (Theme 7)**

Appendix 2 contains the case study transcript along with interviews questions used. Table 5.15 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the knowledge sharing theme for further discussion.

**Table 5.15.: Final Coding for Knowledge Sharing**

Final coding framework	Initial coding framework	
Knowledge Sharing	<ul style="list-style-type: none"> <li>• team learning ability is perceived to be weak</li> <li>• team efficacy/potency is perceived to be weak</li> <li>• Know-How</li> <li>• Explicit knowledge</li> <li>• Tacit knowledge</li> <li>• Embedded knowledge</li> <li>• information, skills, and expertise</li> <li>• exchange knowledge</li> <li>• sustaining competitive advantages</li> <li>• knowledge management systems</li> <li>• team tend to resist sharing their knowledge</li> </ul>	<ul style="list-style-type: none"> <li>• Problem solving ability is perceived to be weak</li> <li>• team environment is perceived to be weak</li> <li>• Team is perceived not to have specialist members</li> <li>• Individual experience is perceived to be weak</li> <li>• Weak database</li> <li>• Communication is perceived to be weak</li> <li>• Relationship is perceived to be weak</li> <li>• Team members connection is perceived to be weak</li> <li>• Unsuccessful project</li> <li>• knowledge is property</li> <li>• no incentive for sharing information</li> <li>• knowledge is valuable</li> </ul>

The researcher was trying to find an explanation to research question 4 on how social capital intangible resources influence project success, based on the statement made on the progress meeting reports. Therefore, the researcher asked the three interviewees how the connection aspect between team members negatively influenced the overall outcome of the project:

- *ADSSC/DC displayed their concern that a large number of work orders are still pending and suggested the contractor should devote experienced gangs to only focus on those pending work orders. (Case 3-Progress Meeting 26)*

Answers for this question explained that one of the factors negatively affecting the project was weak social relationships among the team:

- *The factor that may affect the project negatively is social relationship among the team. (Client PM, C3-CL-IN1)*

- *It was felt that the connection between the members was not so good and that made a tense environment which indirectly effected the project progress. (Consultant PM, C2-CL-IN2)*
- *We try to maintain our relationship with our clients and our team when I came I did my best to improve it as there was issues. (Contractor PM, C2-CL-IN3)*

Social capital involves the social aspects between human beings in an organization. Therefore, social capital can increase the volume of creation, sharing, and management of knowledge. It helps in solving conflicts, speeding up the learning process, and integrating tacit knowledge, and because of this, the project team might not have been able to communicate to share knowledge and experience across the project. This can be seen from the many delayed work orders, as the team was not able to develop their competencies by sharing knowledge, experience, and tactics in an integrated way across a project consisting of 165 similar work orders for the construction of sewerage connections and related works for isolated properties:

- *All have taken but we did not notice that while executing the project. (Client PM, C2-CL-IN1)*

Additionally, due to the weak social relationships, the team's general collective conviction that together they can be effective might have been lacking, as no improvement in meeting the scope and time was observed, as is shown in the following progress meeting report.

- *DC stated that deviation from quality standards has been noticed, and the contractor was reminded to follow the quality standards. (Case 2-Progress Meeting 38)*

Interestingly, in this case project we can see that professional knowledge and expertise of individuals in the project team were lacking and it confirmed that knowledge being particularly recognised and valued in project environments is of big importance. Hong et al. (2008) stated that project performance is positively affected by the project team members' knowledge, tacit knowledge or know-how in particular, and the ability to communicate effectively. Similarly, Deeter-Schmelz and Ramsey (2003) claimed that in order to have better individual and group level performance, team members should share and combine knowledge. There are many external factors that can affect the project scope unexpectedly. Some stressful situations can emerge among team members and this can subsequently influence team performance (Wang and Ko, 2012) as in the case of this project as stated in many progress meeting reports:

- *ADSSC/DC displayed their concern that a large number of work orders are still pending and suggested the contractor should devote experienced gangs to only focus on those pending work orders. (Case 3-Progress Meeting 26)*
- *ADSSC asked the contractor to submit a recovery plan due to the slow progress. (Case 3-Progress Meeting 14)*

In this kind of situations, Wang and Ko (2012, p. 423) suggest that “undesired consequences may occur if the knowledge cannot be effectively shared among the team”, for instance, decreased efficiency in work, more chances of failure and postponements in deliverables as stated below:

- *The team experience was bad and therefore output and productivity was low. (Client PM, C3-CL-IN1)*
- *Experience was causing the team not to be affective and productive. (Consultant PM, C2-CL-IN2)*

Alternatively, Hsu et al. (2007) stated that teams which show healthier communication and knowledge sharing, will reduce uncertainties and complete projects in a better way. Furthermore, thing that is necessary for one team to grow is essential learning from each project (Ochieng and Price, 2010). It is possible to achieve this by acquiring from sharing of tacit knowledge, and sharing experience from previous projects (Goffin and Koners, 2011). Sharp et al. (2003) stated that sharing of experience (lessons learned) will lead to less duplication of work and guarantee that knowledge is used again crossways on different projects. Additionally, noting the lessons learned, project team members gain the knowledge and learning from the project, usually after the project is completed, and later added into the project documents (Newell et al, 2006) or shared in post-project evaluations (Goffin and Koners, 2011). Also, some cases in point of lessons learned that are related strictly to the tacit knowledge of project team members are, “dealing with project budgets, problem solving, coping with time schedules, and coping with changes in product specifications” (Goffin and Koners, 2011, p. 300). Nevertheless, this thoughtful exercise regularly occurs after the project is completed and, by then, the potential benefits of learning from this valuable knowledge, for the current project, are missed as the contractor and team were new to this kind of project as stated below:

- *All of the team members were new to the sewerage industry and had little experience. The management wanted to go into this industry so this was our first project. (Contractor PM, C2-CL-IN3)*

Some other researchers have also noted how reflection as an integral part of effective learning is important. Hammer and Stanton (2009) proposed that several miscarriages encountered by organisations and teams share one fundamental reason – inadequate reflection. As said by Marquardt (2011), reflection is about “individuals recalling, thinking about, pulling apart, making sense, and attempting to understand.” Pedler (2011: xxi) claims that learning is ‘cradled in the task’ and happens with reflection on the experience of taking action. Reflection becomes a central concept discussed in many study approaches. For instance, in the field of experiential learning, Kolb (1984) and Schön (1983), who influence management education (Reynolds and Vince, 2004), highlighted how reflection in learning is important. Still, what is challenging is that reflection does not arise effortlessly or naturally to individuals as thoughtful examination happens when people get space to stand back and relax their assumptions and expectations (Marquardt 2011). This turns out to be even more problematic in team environments where efforts to produce reflection regularly fail (Marquardt 2011), such as the tense environment highlighted by one of the interviewees:

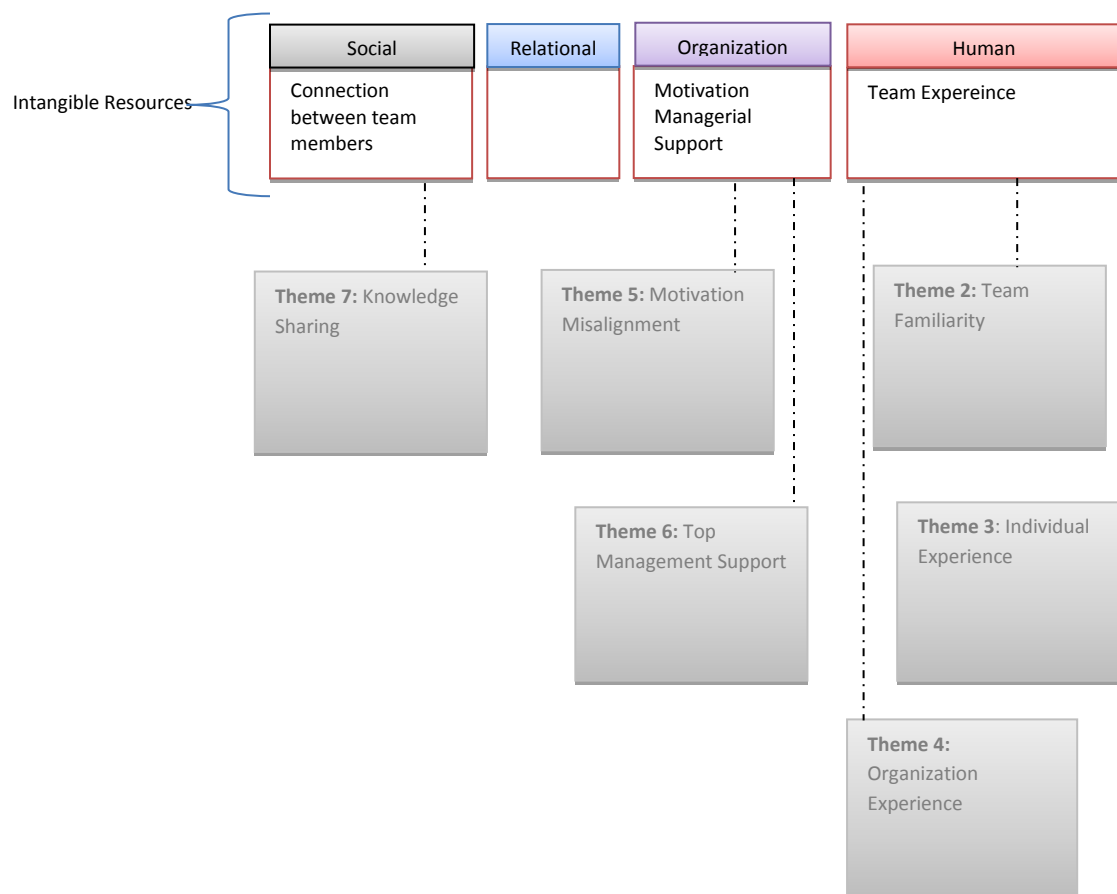
- *It was felt that the connection between the members was not so good and that made a tense environment which indirectly effected the project progress. (Consultant PM, C2-CL-IN2)*

#### **5.4.3 Conclusion**

The analysis of this case revealed some initial findings and themes that may be carried forward to the rest of cases such as top management support and knowledge sharing. These two themes need to be validated further by other cases in order to provide a good basis for answer for **Research Question 2** and **4** and to be confirmed through multiple sources. Regarding the other factors influencing the project outcome such as those related to relationship capital, themes were not generated in the within case analysis due to limited evidence and alight responses related to factors presented in within case. However, there are presented in the cross-case chapter 6 as this phase allowed the researcher to look at the data through multiple lenses.

The most interesting finding in this case was the team familiarity, individual experience, organization experience, and motivation misalignment factors confirmation. These themes also need to be observed carefully in the following cases. For Theme 1 (Leadership Industry-Specific Experience) found on previous case, it seems that Theme 3 (Individual Experience) may also validate it but this has to be analyzed further during case study 4, cross-case and confirmatory case phases and not to make conclusion from this case yet. Figure 5.4 displays the finding of this case in a contextual framework as part of the development of the overall conceptual model. The next section is the analysis of case study 4, which is a project for the construction of sewerage connections and related works for isolated properties in Abu Dhabi Island and Mainland. Themes found in cases 1, 2 and 3 needs to be observed carefully in the following case and factors related to relationship category of intangible resources should be focused on.

**Figure 5.4: Case 3 Framework.**



## 5.5 Case Study 4 (Project O-1484)

This case study was a project to construct the sewer connection and related works in Abu Dhabi Island and Mainland Phase II. It was awarded to a local contracting company (ADMAC). This project was their not their first in the sewerage industry and the region. The overall cost of the project was AED 128,995,305. The construction phase of the contract was 24 months in duration from the letter of award. This case study was selected based on the cost and schedule index and categorised as one of the high performing projects. Similar to the previous case, data were collected using two instruments (semi-structured interviews and supporting documents). One semi-structured interview was first conducted with the client project manager whose contact detail was obtained from the progress meetings reports. Following that, two semi-structured interviews were carried out with the assigned consultant and contractor project managers. Their contact details were also obtained from the progress meeting reports. Table 5.16 includes general information about the project, interviews, and interviewees as well as the research method.

**Table 5.16: Case General Information (Project O-1484)**

Project	Client	Consultant	Contractor	Project Value
Construction of Sewer Connection and Related works in Abu Dhabi Island and Mainland Phase II	ADSSC	Dorsch Gruppe	ADMAC	AED 128,995,305.03
Project Start Date	Project End Date	Methodology	Collection Method	Instruments
6th June, 2010	2nd Dec, 2012	Case Study	Supporting Document and Interviews	Semi-structured, open-ended, direct/indirect, formal supporting document
Interviewees	Role in Project	Interview Type	Interview Duration	Location
Client Project Manager, C7-CL-IN1	Project Manager (Client)	Semi-structured	25 min	ADSSC Headquarter
Consultant Project Manager, C7-CL-IN2	Project Manager (Consultant)	Semi-structured	25 min	ADSSC Headquarter
Contractor Project Manager, C7-CL-IN3	Project Manager (Contractor)	Semi-structured	20 min	ADSSC Headquarter

### 5.5.1 Project Overview

This project was to construct the sewer connection and related works in Abu Dhabi Island and Mainland Phase II. Generally, the main part of the project was:

- Gravity sewer, including related structures and associated works
- Works related to abandonment of existing sewerage
- Reinstatement of surfaces and/or any existing components/services disturbed or damaged as result of the construction and/or maintenance of this project.
- NDM works
- Miscellaneous works at existing sewer networks, which include but are not limited to the following:
  - Connection of new sewerage to existing manholes
  - Construction of new manholes on existing networks
  - Dealing with live sewer flow, over pumping and related works
  - Modify existing manholes to receive new pipelines
  - The provision of labour, materials, plant equipment, instruments, etc. required for works
  - The testing and commissioning of works
  - One year defects liability/maintenance

The scope of works covered under the contract included the following:

- *E30 (B Line)*: Construction of a gravity sewer line in Abu Dhabi Island E 30 with a total length of 1.5 km and a diameter of 1000 mm, the depth of this line ranges from 4 to 7 m and includes X m of micro-tunnelling.
- *Eastern Mangrove*: Construction of a gravity sewer line in Abu Dhabi Island E 30 with a total length of 1.7 km and a diameter of 700 mm, the depth of this line ranges from 6.5 to 9.5m and includes X m of micro-tunnelling.
- *E25*: Construction of a gravity sewer line in Abu Dhabi Island E 25 with a total length of 1.1 km and a diameter of 160–600 mm, to suit the expected future development in this area. It includes X m of micro-tunnelling.
- *Mahawi Camp*: To connect and replace the septic tanks inside Mahawi Camp with the sewer network for a total length of 2.2 km and a diameter from 315 to 450 mm. It includes X m of micro-tunnelling.



- *Mafraq Industrial Area Works*: Construction of a gravity sewer line in Mafraq Industrial Area with a total length of 3.0 km and a diameter of 315 mm, 280 mm and 225 mm.
- *Hydra Connection Works in Shahama*: Construction of a gravity sewer line in Hydra Connection Works in Shahama with a total length of 4.1 km and a diameter of 800 mm, 700 mm and 600 mm. It includes X m of micro-tunnelling.
- *AL ETIHAD TOWERS*: Construction of a sewer pipeline which extends from Khalidia Hotel, Sector W32 to sector W45 of Abu Dhabi Island, and connects to an existing 800mm sewer pipeline, as shown on the tender drawings. The works include but are not limited to the following;
  - Construction of approximately 1.7 km by Non-Disruptive Method (NDM) of sewer pipelines of diameters ranging between 500 mm and 800 mm using GRP pipes.
  - Construction of 20 manholes with depths ranging between 6.0–9.5 m
  - Abandonment of approximately 1.1 km of an existing sewer pipeline.
  - Abandonment and demolition of 10 existing manholes/chambers, including flow management for these manhole/chambers. Supply, installation and all necessary testing, commissioning, and handing over on completion of the work, as indicated above
  - Soil investigation by the contractor during the construction stage to verify the soil suitability

The contract started on 6 June 2010 for a period of 24 months but was completed on 2 December 2012. The Marina Breakwater was removed from the scope at the initial stage of the project and reflected no change in project duration as the amount of work involved was small.

Up to August 2010, no progress was made on site as locations included in the scope were handed over to the contractor. The contractor's activities were limited to preparing the submittals and obtaining approval for the quality plan as well as the key personnel. An updated organization chart had to be re-submitted for approval due to changes of key personnel, construction priorities, base summary program and contract requirements. As a result and due to the lack of resources and equipment, there was a delay to the trial pits near the road crossing in the work orders Eastern Mangrove, E-30 and E-25. ADMAC was requested to increase their resources to complete investigation and start the soil investigation immediately, especially in Salam Street crossing at

Eastern Mangrove. DC asked ADMAC to prepare method statements for NDM. This slow progress could be related to Monitor and control, change management, decision and action plan, overcoming difficulties, perception of the situation and identification of the problem.

Due to the factors related to the management support, and lack of exploration for alternative solution, the project progress might have been influenced. For Example, with the construction period having elapsed by 80 out of 730 days, only 11.0% progress was noticed. This slow progress resulted from a lack of resources, as ADMAC increased their labourers at working sites (E.M, E25, E30) to 52 labourers only.

Due to the factors related to the planning, resources, risk management, procurement strategy management support, problem solving, overcoming the difficulties, the project progress might have been influenced. For example, in October 2010, there was an issue concerning the pipe delivery schedule, which was delayed by ADMAC. The reason for this delay related to a supplier's financial issues. With 171 days of the construction period having elapsed (24.07%), the planned progress was 12%, whereas the actual progress was only 4.29% of works in the areas, due to lack of resources and equipment. Furthermore, with 254 days of the construction period having elapsed (34.75%), the planned progress was 31.70% whereas the actual progress was 13.49%. This slight improvement in progress was because ADAMC had managed to complete the steel fencing in the required sites. However, this was still considered to be slow progress and ADMAC was requested again to increase their project team members in all areas.

After 282 days of the construction period had elapsed (38.57%), the planned progress was 38.55% and actual progress was 16.43%. This still was below the planned progress, as only 6 project team groups were provided in the Eastern Mangrove area, Mafraq area, Mahawi, E 25, E 30, and Etihad Tower areas. As a result, ADMAC was requested to monitor the actual progress for the following two weeks to increase resources and submit an updated program proposal. This could be due to the factors related to risk, problem solving, resources, remorse and realization of contingencies, assess situations, trying and implementing solutions.

Due to the factors related to resources, problem solving ability, and weak management to facilitate problems, the progress might have been influenced. For example, with 310 days having

elapsed (42.40%), the planned progress was 44.31% compared with actual progress of 20.12%. Even though the NDM works was progressing at Etihad Towers and Eastern Mangrove, there was still a need to increase NDM machines and equipment.

At 48.37% of the construction period, planned progress was 51.01% and actual progress was 21.64%. This slow progress was attributed to the poor mobilization for NDM works, which was due to the shortage of NDM machines for the open-cut works. A solution was proposed by the consultant to increase trench boxes immediately to increase the progress. This slow progress at this stage of the project could be due to the factors related to Knowledge sharing, perception of the situation, identification of the problem, exploration for alternative solution, preference ranking, and monitoring and control.

At the 50% stage, planned progress was 48.02% compared with actual progress of 31.03%. Therefore, progress was falling behind the program by 19.98%. The average monthly progress was only 2.00% for the time elapsed of 50%. This slow progress was due to the poor mobilization for NDM works, which was due to the shortage of NDM machines that had been addressed repeatedly during the progress meetings.

At 54.72% of the construction period, planned progress was 55% and actual progress was 34.98%. The progress was falling behind the program by 20.37%. The average monthly progress is only 2.5% for the time elapsed of 57.73%. This delayed progress was due to the same reason mentioned above. With 66.34% completion of the construction period, planned progress was 71.21% and actual progress was 47.95%. The progress was falling behind by 23.26% compared with the planned program. The average monthly progress was only 3.2% for the time elapsed of 66.35%. This delay in progress was due to the same reason mentioned above.

Due to the factors relation to risk, problem solving, resources, remorse and realization of contingencies, and reaching and trying solutions, the progress might have been influenced. For example, to ensure better internal control, ADMAC was officially asked to increase the NDM machines to comply with the NDM works completion in the areas and to submit a program for priority areas E25, Eastern Mangrove, Etihad Towers, and Mahawi Camp immediately. Furthermore, despite variables in progress increasing week by week, ADMAC was officially

requested to resubmit the NDM work program immediately for 3 months, in order to give importance to priority areas and to increase the number of NDM machines to recover the delay. In addition, an official statement was made that if ADMAC's subcontractor, Drillcon, was not able to increase the NDM machines and achieve progress in priority areas, ADSSC would appoint another subcontractor.

With the construction period having elapsed by 75.10%, the planned progress was 85.19% while actual progress was 60.22%, meaning progress was still falling behind by 24.97% against the planned program. However, the average monthly progress had increased to 3.54%, which was the result of the previous internal control measures being followed.

Due to the factors related to monitoring and control, Perception of the situation, identification of the problem, reach a solution, and trying solution, the progress might have been influenced. For example, with the construction period having elapsed 87.55%, planned progress was 94.25% and actual progress was 70.06%. The progress was still falling behind by 24.20% against the planned program and the average monthly progress was only 3.30% for the time elapsed of 87.55%. This delay to progress was due to the shortage of resources and equipment. To ensure additional better internal control, the project was treated as a monitoring program for completion of the contract's outstanding work.

In February 2012, ADMAC submitted a detailed program based on a six-month extension to complete the work, at Shahama Area. The extension request was approved but, despite that, progress was still falling behind by 5.18% against the revised planned program.

With the revised construction period having reached the 91.10% stage, the revised planned progress was 94.53% and actual progress was 59.57%. This delay to progress was also due to the shortage of resources and equipment. ADMAC finally completed outstanding work at Shahama Area on 12 February 2012. However, this project is perceived to be among the high performing projects due to the following factors discussed in the next section.

### **5.5.2 Findings and Discussion**

The findings of this case provided explanations to the four research questions of the study and revealed factors leading to the project's success. These factors are also related to the RBV as they

fit the assumption of the RBV in terms of being valuable, rare, inimitable, and non-substitutable (VRIN). However, findings presented below in the within-case analysis provided explanations to two research questions of the study and revealed two factors leading to the project's success. One factor was an initial finding where the second one is a factor found in the previous case. Chapter 6 (the cross-case chapter) revealed and presents more explanations and additional factors for this case. The researcher discussed the research evidence comprising the influencing factors and quotes from the case study research, and the themes were presented as the following for further processing in the next phases.

#### **A. Top Management Support - (*Theme 6*)**

Appendix 2 contains the case study transcript along with interviews questions used.

Table 5.17 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the top management theme for further discussion.

**Table 5.17: Final Coding for Top Management Support**

Final coding framework	Initial coding framework	
Top Management Support	<ul style="list-style-type: none"> <li>• PM is perceived to help project</li> <li>• PM managed lack of resources successfully</li> <li>• Project team is perceived to help project</li> <li>• team efficacy/potency is perceived to be weak</li> <li>• Risk management</li> <li>• Procurement strategy</li> <li>• Weak management to devote time</li> <li>• Weak management to review plan</li> <li>• Weak management to follow up on results</li> </ul>	<ul style="list-style-type: none"> <li>• Client is perceived to be satisfied</li> <li>• Problem solving ability is perceived to be weak</li> <li>• Team is perceived not to have enough resources</li> <li>• Successful project</li> <li>• management support is perceived to be weak</li> <li>• organization capital</li> <li>• relationship capital</li> <li>• Weak management to facilitate problems</li> <li>• Management support is a critical success factor</li> </ul>

While attempting to confirm one of the organizational intangible factors influencing project success in the previous case, the researcher asked the three interviewees about the managerial support factor and its influence on success of the project. The interviewees stated:

- *Management support was not that good; otherwise they would have done something with the issue of resources and equipment. (Client Project Manager, C4-CL-IN1)*
- *Yes. They were not able to solve this problem, which was the main cause of the project delay. (Client Project Manager, C4-CL-IN1)*
- *I'm not sure if the management was in favour of adding more resources to the project at that time. They were not able to increase the resources. (Consultant Project Manager, C4-CL-IN2)*

The above findings reveal that for the project to be effective, the project team should be supported to take action proactively and promptly with regards to problem solving. Throughout this case, the lack of equipment resources could have presented a great obstacle, as can be noticed in Progress Meetings No. 22 to No. 35, with strong statements, such as:

- *ADSSC express their concern for delay in progress and poor mobilization for NDM works and asked for the increase of NDM machines. (Case 4 – Progress Meeting Report No. 22 to No. 35)*

From the definition of top management support (TMS) that is previously presented we can see that TMS is “when a senior management, the CEO and other senior managers devote time to review plans, follow up on results and facilitate management problems” (Young and Jordan, 2008). The cost and potential of the project will determine the time TM should spend. We can understand this as the fact that CEO and the other senior managers should allocate time only to be aware of the project status and interfere if necessary and a project top management should employ more time on these activities. Understanding how important the TMS factor is gives the explanation of why we have some projects successes or failures. We can see this in the present case that was a partly project failure. There was no CEO involved and no top management interest. The contractor CEO did not allocate time to interfere and resolve conflicts between the project client and the contractor project team. The progress meeting reports recognized numerous key risks for the steering committee, but they continued with uncertainties for the complete length of the project. The risks came to pass (unsurprisingly) and the prearranged benefits were compensated as anticipated. The client did not have ability to affect the contractor to perform on recommendations requiring process or structural change and the contractor top management did not interfere. Facilitation of management problems was included in the definition of TMS and this example proposes that facilitation involves conclusions to be made to

diminish or agree to take business risks that are freestanding of the authority of the project team as stated below:

- *Management is supportive to the team but sometimes it is not just by increasing the resources that you will be able to increase progress, because you need to have the right people. Thus, it is not the numbers only, it is the quality of the team you are bringing in; we work within boundaries so not all problems can be solved easily like that.* (Contractor Project Manager, C4-CL-IN3)

The results therefore support the conclusion that TMS is an important project success factor. They suggest that the essence of top management support relates to effective decision-making to manage risk and to authorise business process change. It appears that TMS is most dependent on the ability of the project client to work with other top managers to authorise business process changes and make decisions to mitigate or bear risk. Success also appears to be dependent on the willingness of the CEO to actively intervene when the client lacks the authority or influence to resolve any impasses in decision-making (Young and Jordan, 2008). However, to critically analyze the above findings and the reason why this project case was among the perceived high performing cases, it is worth looking at them from the perspective of project leadership. As discussed earlier, the leader represents the influential factor to the organizational mission and goals and first line teamwork. The project manager has an important role of overseeing the project and project team by being at the head of the project process, and ultimately making sure the project ends in success. In this project case, evidence provides indication of the ability of the assigned project management to deal with the lack of resources situation to complete the project (partial success) as stated below:

- *With my limited number of resources, I was able to complete the project.* (Contractor Project Manager, C4-CL-IN3)
- *He helped the project in away but he was lacking resources.* (Consultant Project Manager, C4-CL-IN2)

Therefore, leadership plays an important role in the phases of the project life cycle (planning, executing, and controlling in particular). By adopting these qualities, the project's clients are more

likely to feel the positive impact of a successful project as stated by the client and consultant representatives below:

- *He was ok. They were able to meet the standard and follow the instructions.* (Client Project Manager, C4-CL-IN1)
- He helped the project in away but he was lacking resources. (Consultant Project Manager, C4-CL-IN2)

This shows projects can also move more smoothly and efficiently, receiving positive results in less time. This is beneficial not only to the stakeholders, but to members involved: the organization, the project manager, executive staff, team members, and outsourced facilities. However, there is also an alternative explanation of the data found in this case as described in the following theme.

**A. Joint Problem Solving - (*Theme 8*)**

Appendix 2 contains the case study transcript along with interviews questions used. Table 5.18 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the joint problem solving theme for further discussion.



**Table 5.18: Final Coding for Joint Problem Solving**

Final coding framework	Initial coding framework	
Joint Problem Solving	<ul style="list-style-type: none"> <li>• Knowledge sharing</li> <li>• Perception of the situation</li> <li>• Identification of the problem</li> <li>• Preference ranking</li> <li>• Exploration for alternative solution</li> <li>• Remorse and realization of contingencies</li> <li>• Situation</li> <li>• Implement</li> <li>• Readiness</li> <li>• Inter-organizational trust</li> <li>• decision and action plan</li> <li>• overcoming the difficulties</li> <li>• reach a solution</li> <li>• trying solutions</li> </ul>	<ul style="list-style-type: none"> <li>• Communication is perceived to be weak</li> <li>• Unsuccessful project</li> <li>• Client dissatisfaction</li> <li>• Monitoring and control</li> <li>• human capital</li> <li>• Connection between contracting parties is perceived to be weak</li> <li>• organization capital</li> <li>• Coordination between parties is perceived to be weak</li> <li>• relationship capital</li> <li>• relationship with contracting parties is perceived to be weak</li> <li>• Social capital</li> </ul>

The researcher tried to find an explanation to research question 3 on how the relationship of capital intangible resources influences project success and, based on the statement made in on the progress meeting reports, the researcher asked the three interviewees how the relationship with Abu Dhabi Municipality influenced the overall outcome of the project as no issue was noted in any of the progress meeting with regards to delay in obtaining permits or approval. Interviewees stated:

- *No. everything was ok. ADAMAC maintained good cooperation with them. They got all the non-objection and approval from them. (Client Project Manager, C4-CL-IN1)*
- *Without approval you cannot start the work. Looking at the scope of the project, approvals had to be obtained every time a new area to be opened so we have to highlight these important factors in every meeting. No issues of approval and permits from authorities. (Consultant Project Manager, C4-CL-IN2)*
- *So much of our time was spent on the approval process of this project. We did not face any issue with approval. (Contractor Project Manager, C4-CL-IN3)*

While acknowledging that relationships with entities (such as municipalities) directly associated with the project is needed to speed up the process and avoid delays (Ning and Ling, 2013). However, the answer obtained may not necessary mean that the creation, maintenance and extension of the external relationships of the firm have contributed heavily to the project outcome improvement due to two reasons. The first, obtaining such construction permits from the municipality is a straight-forward exercise with such a common project scope and there are standard requirements once followed and submitted over the counter, permits most likely would be obtained. The relationship with other entities such as the municipality factor might have not played a significant role here. One interviewee stated:

- *No. everything was ok. ADAMAC maintained good cooperation with them. They got all the non-objection and approval from them. (Client Project Manager, C4-CL-IN1)*

The second was due to the strength of relationship, cooperation, and impression among the contracting parties (client, consultant and contracting representatives) noticed throughout the interviews. Therefore, such good relationships among contracting parties might have given a growth to an expressively good time performance for the reason that it could be represented as an informal supervisory instrument that allowed contracting parties to synchronize with each other (Ebbers and Wijnberg, 2009) and assisted them to get used to contingencies in an appropriate and effective way (Uzzi 1997) as stated below when the researcher asked questions related to the internal control factor:

- *We kept an eye especially on this [a problem] as they were many of them. That is due to the controlled plan we set. (Consultant Project Manager, C4-CL-IN2)*

Because of good relationships among parties, transactions were fixed in the networks of the contracting parties (Granovetter 1985). Uzzi (1997) stated that quality relationship can have a positive effect on time performance. The findings demonstrated that good relationships between contracting parties possibly will result with better satisfaction as stated below when the researcher asked questions related to the team leadership factor:

- *He helped the project in away but he was lacking resources. (Consultant Project Manager, C4-CL-IN2)*

Having good relationships among parties will result in establishing trust, and this supports and encourages commitment (Uzzi 1996), and enables the sharing of knowledge (Chinowsky et al. 2008). An additional motive is that good relationships establish the foundation for contract management (Ebberts and Wijnberg, 2009) and decrease the necessity for official controls (Dekker and Abbeele, 2011) as stated below when the researcher asked questions related to the experience factor:

- *The team was good. They are able to follow the guidelines and standards without mistakes. I did not notice any issue with them but the problem is the number was low.* (Client Project Manager, C4-CL-IN1)

These methods improved project time and client satisfaction. In order to develop better relationships, joint understanding among contracting parties is crucial. Parties must be able to distinguish the objectives and requirements of the other contracting parties and how these communicate to their own role. This will let the parties accomplish a common goal in a good way. A basis of joint understanding delivers an actual means to report difficulties because each party will recognize the concerns and circumstances faced by the other parties. One interviewee stated:

- *He helped the project in away but he was lacking resources.* (Consultant Project Manager, C4-CL-IN2)
- *To avoid facing problem with this, we use to highlight the importance of this in almost all of our meetings so we were able to control and monitor it.* (Client Project Manager, C4-CL-IN1)

Devising progressions such as the timely progress meetings in place that will result with operational problem solving and fewer conflicts subsidizes the developments of better relationships. The findings also suggested that developing close relationships requires keeping open lines of communication (Chen and Chen 2007). For problem identification and conflict resolution an effective communication system is very important (Chan et al. 2004). It also stops some issues becoming disputes (Wong and Cheung 2005), contributes to avoiding misunderstandings, rework, and delays (Love et al. 2010), allows a jointly suitable resolution to be developed (Chen and Chen 2007), and decides among differences efficiently and studiously (Wong and Cheung 2005) as stated below when the researcher asked questions related to the monitor and control factor:

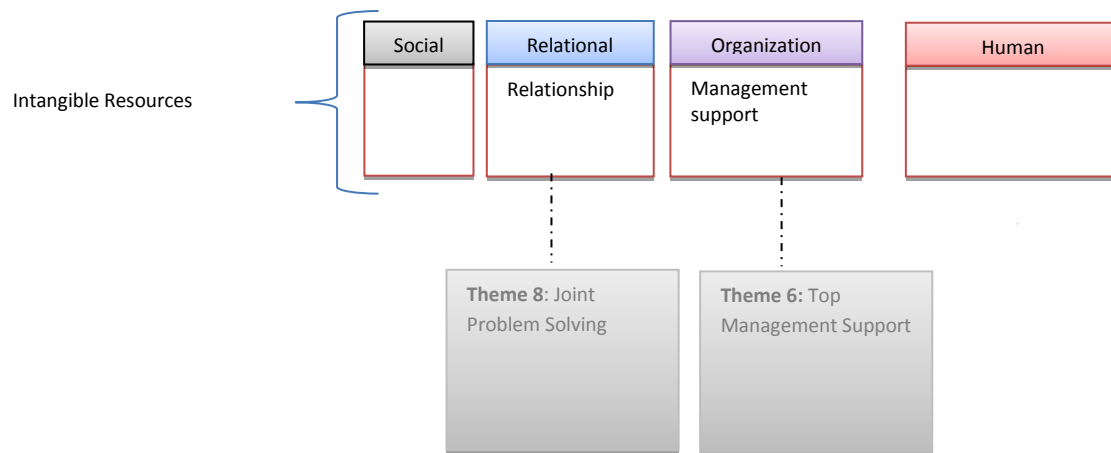
- *We put more control on this so you can say it is the control that helped in this improvement but the potency factor is not as they were working together for long I think.*  
(Client Project Manager, C4-CL-IN1)

Concluding the previous discussion, these benefits help to simplify relationship development in the network. The findings propose that good relationships can have need of timely project information sharing (Macneil, 1986b). The establishment of precise and impartial information might escalate the level of joint trust. Besides decreasing doubts, an actual stream of project information could give to the parties a precise update of project progress. This could help parties to jointly predict and classify any possible problems at an initial stage and additionally strengthen relationships.

### **5.5.3 Conclusion**

The analysis of this case confirmed one theme found in previous cases that has the potential to provide answer to research question 2. This theme related to managerial support was also found to be the most critical factors that influence the outcome for this project case. This case provided more evidence on why top management support plays an important role in the project life cycle. However, the most interesting finding in this case is that this case managed to capture one main theme (Theme 8: the joint problem solving theme). This arising theme can potentially provide the missing answer for research question 3. Regarding the other factors found in previous cases, there is no strong evidence noticed in this case that has the potential to confirm them yet. Furthermore, new themes related to human and social were not generated in the within case analysis due to limited evidence and slight responses related to top management support and joint problem solving factors. However, there are presented in the cross-case chapter 6 as this phase allowed the researcher to look at the data through multiple lenses. Figure 5.5 displays the finding of this case in a contextual framework as part of the development of the overall conceptual model. The next chapter is the cross-case and literature comparison phase, which is also meant to discover more themes as well as avoid reaching false or premature conclusions due to processing information in a biased way while conducting the within-case analysis. Therefore, it is important to counteract the tendencies by looking at the evidence in divergent ways. The idea behind this phase was to force the researcher to go beyond initial impressions through the use of diverse and structured lenses on the data.

**Figure 5.5: Case 4 Framework.**



## **Chapter 6: Cross-Case Analysis**

### **6.1 Introduction**

Cross-case for patterns search is basically a tactic driven from the reality that humans are poor processors of information because they arrive at conclusions based on limited information (Kahneman and Tversky, 1973) and are influenced by the vividness of information (Nisbett and Ross, 1980) or elite respondents (Miles and Huberman, 1984). Humans tend to ignore basic statistics (Kahneman and Tversky, 1973), or drop disconfirming data (Nisbett and Ross, 1980). This may result in reaching false or premature conclusions due to processing information in a biased way. This chapter provides the analysis for the second research objective (Objective 2) that is related to finding answers for research questions 1, 2, 3, and 4. Chapter 5 has provided the basis for the cross-case analysis in this chapter. This chapter also repeats some of the full underlying quotations and interview context for statements and themes. The full interview transcripts can be reviewed in Appendix 2. These upcoming sections display the results of the cross-case results in tables supported by a narrative around the results. For a discussion of the empirical findings which is meant to lead to practical implications, it appeared useful to use the arising main themes from the within-case analysis in chapter 5 and compare them to avoid reaching premature or false conclusions due to processing information in a biased way while conducting the within-case analysis. New themes are always meant to be discovered from this comparison. Furthermore, as the building evidence exercise continues, this chapter also focuses on comparing the extant literature presented in the literature review chapter with the emergent themes. This helped to assess how well the evidence derived from the study fits with case study data. The principal focus here was to constantly compare theory and data to assess the extent to which theory might fit the data. This is because a close fit between theory and data is crucial to building a sound theory. This process considered a broad range of literature. This includes asking what is it similar to, does it contradict with it, and what is the reason.

This chapter is split into two main parts. Firstly, the similarities and differences between the case studies are presented followed by the findings discussion in light of the existing literature. The cross-case analysis during this chapter is designed to present a logical chain of evidence that will

improve the transferability of the results beyond the single case study, as explained by Miles and Huberman (1994) and Yin (2009). The logical chain of evidence will be based on the confirmed and arising main themes that emerge in this chapter. The results are compared for conclusions which can be used beyond the single case at the end of the chapter. Table 6.1 displays a summary of the emerging main themes from the empirical data collection of previous four case studies followed by sections discussing the findings and analysis.

**Table 6.1: Summary of the emerging main themes**

Category	Theme	High Performing		Low Performing	
		Case2	Case4	Case1	Case3
Human Capital	1) Leadership Country Specific Skill	N/A	N/A	(+)	N/A
	2) Team Familiarity	(+)	N/A	N/A	(+)
	3) Individual Experience	(+)	N/A	N/A	(+)
Organization Capital	4) Organization Experience	(+)	N/A	N/A	(+)
	5) Motivation Misalignment	(+)	N/A	N/A	N/A
	6) Top Management Support	N/A	(+)	N/A	(+)
Relational Capital	7) Joint Problem Solving	N/A	(+)	N/A	N/A
Social Capital	8) Knowledge Sharing	N/A	N/A	N/A	(+)

Green = Confirming the identified main theme

White = No-effect or not applicable

## **6.2 Human Capital Finding and Discussion – Study Objective 2 / Research Question 1**

The cross-case analysis has confirmed four themes found in the previous chapter and revealed initial findings and two main themes related to human capital. These two themes can potentially provide more evidence and good explanation to research question 1 of the study. The researcher

discussed the research evidence comprising the influencing factors and quotes from the case study research, and the theme related to the human capital category are presented as follows.

### **6.2.1 Leadership Industry Specific Skill (Theme 1)**

This theme was first identified in case study 1 and relevant evidence and discussion were presented in the within-case analysis of this case. When looking at the evidence in divergence way, it appears that both low-performing project cases provided evidence showing that due to the weak industry-specific experience, project performance was low in meeting project time. The researcher observed that case study 3 interviewees repeatedly referred to ideas associated with no sewerage experience, technically weak, and contractor's team experience. In fact, the technical experience factor discussed and analyzed in case study 3 played a major role in the project outcome. The case shows indication of the role of industry-specific experience, and in particular, the experience that individuals have (Theme 3) including the project team leader. When cross-analysed with the high-performing project cases, evidence from interviews and progress meeting reports revealed higher industry-specific experience affecting project performance positively. Similarly, the technical experience factor discussed and analyzed in case study 2 played a positive role in the project outcome. The case shows indication of the role of industry-specific experience, and in particular, the experience that individuals have (Theme 3) including the project team leader. The high-performing project case (case study 4) also provided evidence showing that due to the strong industry-specific experience, project performance perception of consultant and client was influenced resulting in giving extra work to the contract which was not part of the scope. One interviewee stated:

- *He was ok. They were able to meet the standard and follow the instructions. (Client Project Manager, C4-CL-IN1)*

Furthermore, while trying to understand why case study 4 was considered to be a high performance project as indicated in the project performance index as well as the reason on given project time extension to the contractors as indicated in the progress meeting reports, the researcher assumed that client perception of overall project success was influenced by project quality performance and the role the assigned project manager played due to his leadership skills as well as his industry-specific skill as stated below:



- *He helped the project in away but he was lacking resources.* (Consultant Project Manager, C4-CL-IN2)

This resulted in time extension given to the contractor. Therefore, leadership industry-specific experience is a major advantage in adopting and implementing processes and procedures necessary to operate and carry out the project effectively. Such experience also helps for accurate risk planning, resource planning, quality planning, and time planning. The following points summarize the finding based on looking at the data in divergent ways:

- Both groups showed direct evidence of industry-specific experience importance.
- High-performing project cases provided evidence showing that due to the strong industry-specific experience, project performance perception of consultant and client was positively influenced.
- Low-performing project cases provided evidence showing that due to the weak industry-specific experience, project performance was negatively influenced.

The project leader is one of the powerful factors for an organization to achieve its mission and goals. In a constantly changing environment, the project leader should not only have “positive values, highest levels of ethics, morality, lead from the heart, personal capabilities, out-of-the-box thinking, and interpersonal skills” (Pandya 2014, p. 40), but also should have technical knowledge. As Walker said (2011), for the twenty-first century a completely new style of leadership is a necessity. The project manager should have style that delivers success to time, budget and quality, and position his/her organization in a way that will make it able to share and recall knowledge, and subsidizes to organizational sustainability. Nevertheless, in order to be an operative project leader, it entails a mixture of technical skills, and a capability to apply the behavioral competencies defined by Muller (2012). Moreover, vision, ethics and morality and the ability to lead change is necessary. Projects that are yet to come should be well served to select project managers who display the leadership skills and characteristics that are necessary for project success and sustainability of the organization. Experience that is specific for a certain industry can significantly contribute to transactional and transformation leadership skills that are necessary for dealing with different situations throughout the project cycle successfully. With such technical and industrial experience, the assigned team leader can provide a better technical excellence to team support by motivating the team, facilitate team activities, and organize team work in a process oriented way.

Moreover, the assigned team leader can nurture, enforce, and monitor the product technical excellence by ensuring it is realized by members of his/her team. With such technical and industrial experience, the assigned team leader can support innovation in the team work. This is by developing the team spirit and desire to experiment and try new things and unconventional solutions. Furthermore, with such technical and industrial experience, the assigned team leader can better organize accumulated knowledge gained by the team, and making it available and easy to retrieve whenever needed by any team member. Also, organizing the team process, which is a responsibility that may take a lot of time and effort to monitor and foster. Therefore, project process is managed by the project manager, a person who plays a significant role in supervision of the project and project team, and eventually guaranteeing project success. Examining special skills of leadership, such as their technical skill, and defining their constructive influence can add value to project managers in any industry and consequently may lead to project success. Also, the industry-specific skill can contribute to some leadership styles in a way as: team building, openness, self-confidence, organization, and clearly defining project successes, reevaluating and making adjustment to the situation when necessary (Kaminsky 2012). By accepting these abilities, the project's stakeholders, such as project consultants and clients, are expected to feel the positive impact of a successful project. Projects may similarly move more efficiently and powerfully, getting positive results in a lesser amount of time. This is valuable not only to the investors, but also to the parties that are involved: the organization, the project manager, executive staff, team members, and outsourced facilities (Kaminsky 2012).

Despite what was the subject of discussion so far, organizations would rather engage project manager specialists with better management and leadership skills than technical skills. However, there is a fact that the project manager that lags with technical skills can bring handicap to an organization (Toor et al. 2006). There are some difficulties related to terminology, the technology, and knowing when and what questions to ask, that the project manager will face and adequately being able to recognize the responses (Whitten 2000) as stated in one of the low performing case:

- *He was technically weak and also his feedback.* (Client Project Manager, C1-CL-IN1)
- *The team leader's knowledge in ADDC [technical] specifications of DBs, transformers and electrical cables was very limited. If he was aware of these specifications, he could have acted at the early stage of the project and either suggested alternative proposal or requested materials specification changes.* (Client PM, C1-CL-IN1)

The project manager may not be able to command specific project management know-how. Furthermore, the emergence of international dimensions and standards needs expertise as important areas of competencies for project managers, and reflects current realities and developments due to the globalization of organizational activities.

Our finding from these cases under investigation departs from the notion that project leaders need to have an understanding of technology, and not necessarily need in-depth technical skills and knowledge because the use of team members that are subject matter experts often be an effective technique to supply the required expertise. It was interesting to compare this finding about leadership technical competency with recent study of (Kaminsky 2012). In his study, key non-technical leadership practices that are important for the success of IT projects are identified. Data for this study were collected from actual IT projects conducted at U.S. companies crosswise numerous different industry sectors. The main results of the study specified that non-technical leadership practices play an important role in the success of IT projects. On the other hand, as is the case with other research, the sample could impact the results presented there. One of the main limitations of the study is that the companies that participated were from the same major Midwestern city. Having the companies from the same geographic location can affect generalizability of the findings beyond the specific geographic location. Also, that study depended on participants' remembrances of earlier activities. For some cases, participants' remembrances were based on activities many years in the past and there is no doubt that past remembrances would not be very precise as remembrances of very current activities. Another limitation is that the study focused only on IT project management and its findings may not have been assumed to be applicable to other industries such as the utilities sector. It is also important to single out (Lindgren and Packendorff, 2009) and (Nixon et al. 2012) studies that reviewed the current literature with a purpose of exploring how performance of leadership in project management determines project outcomes. As Anantatmula (2010) claimed, the manager's leadership role is of great importance in motivating people and creating an effective working environment in order for the project team to meet greater challenges in today's global economy. It is also important to mention the study of (Kissi et al. 2013) where they used a questionnaire survey to collect data from 112 project managers in UK project-based organisations, and in their study transformational leadership behaviour of portfolio managers was found to have a positive and significant relationship with project performance. However, based on the research findings of the cases under investigation, it is clear that in this day and age, the project leader needs not only to

possess “a positive values, highest levels of ethics, morality, lead from the heart, personal capabilities, out-of-the-box thinking, and interpersonal skills” (Pandya 2014, p. 40), but also should possess in depth technical knowledge. A new style of leadership is necessary for the public sector, one that enjoys success against the expected delivery triangle of time, budget, and quality, but also positions (through his industry specific technical skill) the organization to be able to share and retain knowledge, and contributes to organizational sustainability. Therefore, to be an effective project leader, it requires a combination of technical skills, and an ability to invoke the behavioral competencies described by Muller (2012). This combination is necessary to create balance and develop into a leader that can produce an efficient team and satisfactory end results.

The responses from the interviews in Table 6.2 show two almost certain statements coming from one source supporting the importance of leadership Technical Skill for project success. However, these answers are not enough as they are coming from a single source to stand on their own and therefore require further validation and confirmation in the next chapter.

**Table 6.2: Statement supporting the importance of Leadership Industry-Specific Skill**

Theme 1	Supporting Statement
Leadership industry-specific skill	<i>The team leader’s knowledge in ADDC [technical] specifications of DBs, transformers and electrical cables was very limited. If he was aware of these specifications, he could have acted at the early stage of the project and either suggested alternative proposal or requested materials specification changes. (Client PM, C1-CL-IN1)</i>
	<i>He was technically weak and also his feedback. (Client Project Manager, C1-CL-IN1)</i>

### 6.2.2 Leadership National Culture (Theme 10)

Initially, the culture argumentation was not clear to the researcher, but after continuing the analysis of the local experience or country specific experience finding referred to in cases and reviewing recent literature regarding the effect of culture in project success, it became clear that the role of national culture could be an influential factor. In the case of the low performing cases (case studies 1 and 3), researcher observed that interviewees repeatedly referred to ideas associated with experience, local, and project manager. The fact of the lack of the contractors’ local experience was found to be repeated in many progress meeting reports of case 1. The researcher reviewed the progress meeting reports of cases 1 and 3 to seek for human intangible factors which were found in the previous literature which could be related to the project manager.

The fact of the local experience was observed. The low performing project case show evidence that weak country-specific experience on the part of the assigned project manager caused the project to be delayed which at the end might negatively affect project performance as observed by the researcher. In the case of the high performing project case, evidence showed no issue of weak country-specific experience of the project manager and his team, which might have resulted in a better performing project. In fact, one of the main factors that increased the project performance was country-specific experience on the part of the project manager and his team. This could possibly give the team competencies necessary to execute a project on time and to the standard required. The team might have been enabled by the country-specific experience to make a stronger plan for avoiding deviations from the standard required and to implement processes and procedures necessary to operate and carry out the project effectively, such as safety procedures and technical activities.

In the literature, it is shown that some countries have developed guides for public sector contracting projects. These guides were made in order to assist project managers in the field with their work. These guides are specific to the particular environment of the country. Guides are still being acquired in, for example, Abu Dhabi. As an outcome, projects may experience delays and thereby exceed initial time. When it comes to that, extensive delays may provide a possibility for timely and costly disputes and claims. Most important causes of delays in projects were deeply researched by Odeh and Battaineh (2002) where they conducted a survey. Inadequate contractor experience of the environments they are operating in was identified among the top ten most important factors besides other causes such as owner interference, slow decision making, labour productivity, financing and payments, improper planning, and subcontractors. The significant challenge project managers' face is that each environment is not the same and there is the possibility that what works at home may not work in a foreign environment. Project managers should operate within the laws and regulations of the host country. Political stability and local laws can strongly influence how projects will be implemented and in what direction they will go. Government corruption must be taken into account as well. Basic economic and financial issues in foreign countries and regions influence choices of site selection and how business will be conducted for potential projects.

The project manager must understand the national culture of the country where they are operating in. This also leads to better synchronisation with their team members. For example, there are quite a few international donor agencies and private companies that have been coming to the developing world to execute mega projects in energy (especially power generation), construction, IT and telecom, and privatization of state-owned enterprises (Sheikh et al. 2014), they faced challenges when it comes to execution terms and successful delivery of projects as in the case of case study 1. One interviewee stated:

- *This was their first project here so prior to this project they lacked the local experience.*  
(Consultant Project Manager, C1-CL-IN2)

One of the reasons that they faced challenges in positively executing and delivering projects is the misalignment between project objectives and project managers' knowledge of the national culture. In addition, project managers or leaders of these organizations might have been lacking the requisite leadership traits to build high-performance teams. Senior management of these international organizations, as well as local companies, must understand that selecting a culturally savvy project manager with certain leadership traits can be an important factor for the success of projects. The project manager must also have some of the leadership traits to build and manage a high-performance team in a high-power distance culture. Not fully understanding the national culture, values, beliefs, and norms can lead to project failure. Because of that, quite a number of international donor agencies and multinational companies have not been able to successfully deliver projects in the developing world. Bringing a foreign workforce and best practices may not be enough to plan, execute, and successfully deliver projects in a high-power distance culture such as the UAE. It requires a good knowledge and understanding of the national culture, values, beliefs, and norms. This can be seen from case study 1 where the whole work force including the project manager was brought from Singapore with limited knowledge on the culture. One interviewee stated:

- *All team members were brought from Singapore to work on this project so we were all new to the area.* (Contractor Project Manager, C1-CL-IN3)

Bringing a manager from Singapore might not be a guarantee that the project will be executed successfully in a high-power distance culture. For example, a project manager trained in Singapore

and with no experience of working in a high-power distance culture will probably not be able to execute and deliver projects in the best manner. Part of the reason is that they may not be able to understand the national culture and team dynamics. Thus, if an organization in a high-power distance culture decides to recruit project managers and team members from abroad, it must ensure that the project manager and team members have gone through proper training on national culture. Additionally, building high-performance project teams in a high-power distance culture is also a challenge, as people in this type of culture have different values, beliefs, and interpretations of work and projects than those working in Singapore, or Western countries such as the United States and the UK. The project manager or leader needs to understand the national culture, define project objectives according to the cultural norms, and embrace a leadership style that is similar to the national culture.

From Hofstede's definition of culture it can be learned that a project manager can be influenced by cultural dimensions because they do not work in isolation. Hofstede and his colleagues (Hofstede 1980; Hofstede and Bond, 1988) have stated that power distance is as an important determinant of leadership styles. Power and inequality are of course very fundamental aspects of any society, and any individual with some international experience is aware that societies are basically unequal, but some are more unequal than others (Hofstede and Bond, 1988, p. 10). Hofstede and Bond (1988) state that countries with a high-power distance culture, such as the UAE, prefer an autocratic leadership style and a strong directive approach by supervisors. This weakness of leadership personality that affected one of the low performing cases can be seen clearly by the following statement:

- *Leadership was an issue on the project.* (Consultant Project Manager, C1-CL-IN2)

Because power distance is a key determinant of leadership style, it indicates that the project managers working in a high-power distance culture can be influenced by the national culture. It also shows that project managers' leadership competencies can have a relationship with national culture, especially when they are working in a high-power distance culture (Sheikh 2012, p. 36). Thus, a project manager needs to understand the values and beliefs that the project team members hold so they can build and manage a high-performance team that could lead to project success. Based on figure 3.3 of chapter 3, the UAE's PDI is the highest when compared against

Singapore and the UK. The reason it was compared with the UK is to understand the difference in leadership styles of project managers working in a high-power distance culture versus low-power distance culture. The leadership style of project managers working in high-power distance cultures is different from those working in low-power distance cultures. Because of that, project managers who are used to working in a low-power distance culture may not be successful in a high-power distance culture, or vice versa. The power distance index values in figure 3.3 indicate that project managers working in the UAE must understand that inequalities in these cultures are readily accepted. It also explains that the power is distributed unequally between leaders and subordinates. Thus, project managers are expected to have more power than the team members. Similarly, the project manager needs to understand that their superior is expected to exercise more power than them. High-power distance culture also means that hierarchies exist in that culture, and people accept those hierarchies. When there are hierarchies there also are bureaucracies, which means it could take a more time for decision-making and execution of project activities. Thus, a project manager must accept the hierarchies, bureaucracies, and a multi-step decision-making process in high-power distance cultures. That is why many project managers have experienced that executing projects in high-power distance cultures could encounter longer lead times for decisions to avoid unnecessary delays that can lead to project failures. It also shows that an organization must recruit project managers that have the Emotional Intelligence (EQ) and interpersonal skills and training to work in a high-power distance culture. This means the project managers must have the skills to cope with a bureaucratic structure and must have the patience to deal with team members by using a greater level of direction.

As argued in chapter 3, earlier studies have indicated a relationship between national culture and leadership competencies or styles. Javidan and Carl (2004) have stressed that the relationship between national culture and leadership is an important and debatable subject. This indicates a relationship between national culture and leadership. Other researchers have argued for direct impact of culture on leadership styles, arguing that specific cultural traditions and norms are connected to differentiate leadership styles (Smith and Peterson, 1988). This shows that both national culture and leadership style of a project manager can have an influence on project success. House et al. (2004, p. 53) have stated that there is empirical evidence showing leader attributes, status, behaviour, and influence vary largely because of culturally unique forces in the country or regions in which the leaders function (Sheikh 2012, p. 49). This indicates that project



managers' leadership attributes status, behaviour and influence can also differ because of the national culture of the country that they are working in (Sheikh 2012, p. 50). The Global Organization Behavior Effectiveness (GLOBE) study (House et al. 2004) also showed a link between national culture and leadership competencies or culturally endorsed implicit Leadership Theory (CLT) factors. Thus, there is a relationship between national culture and leadership. In their study, Müller and Turner (2007) showed a relationship between leadership and project success. A research study conducted by Sheikh (2012) showed that there was a relationship between CLT factors and project success in a high-power distance culture such as Pakistan. He further identified that there was a positive correlation between bureaucratic and face-saving leadership factors and project success in a high-power distance culture. Because of that, the above-mentioned research studies indicate that there is a relationship between national culture, leadership, and project success. Therefore, the project managers and leaders must have certain leadership competencies that are in relation with the national culture in order to execute and deliver a project successfully in the public as well as the private sector. In the present study, the responses from the interviews in Table 6.3 show three statements coming from three sources (but a single case) supporting the importance of leadership national culture for project success. However, these statements are ambiguous and not certain enough to stand by themselves, and therefore require further validation and confirmation in the next chapter.

**Table 6.3: Statement supporting the importance of Leadership National Culture**

Theme 10	Supporting Statement
Leadership National Culture	<i>The team leader here and abroad they do not have the local experience [including country culture]. These people may have strong experience back home and maybe fit but when they come here the local experience is needed. (Client PM, C1-CL-IN1)</i>
	<i>This was their first project here so prior to this project they lacked the local experience. (Consultant Project Manager, C1-CL-IN2)</i>
	<i>All team members were brought from Singapore to work on this project so we were all new to the area. (Contractor Project Manager, C1-CL-IN3)</i>

### **6.2.3 Team Familiarity (Theme 2), Individual Experience (Theme 3), and Organization Experience (Theme 4)**

Both of the low-performing project cases provided evidence showing that due to the weak industry-specific experience, project performance was low in meeting project time. When cross-

analysed with the high-performing project cases, evidence from interviews and progress meeting reports revealed stronger industry-specific experience influencing project performance. In fact, the high-performing project case provided evidence showing that due to the strong industry-specific experience, project performance was higher. Therefore, industry-specific experience is an advantage in adopting and implementing processes and procedures necessary to operate and carry out the project effectively. The following points summarize the finding based on looking at the data in divergent ways:

- Both groups showed direct evidence of industry-specific experience importance.
- High-performing project cases provided evidence showing that due to the strong industry-specific experience, project performance was better.

This might serve as indicator of the role of experience that individuals have, including the project team leader. Experience in a particular industry may be exactly what matters to project success rather than experience in general. This statement is important especially when various team member roles require different technical skill sets. Accordingly, it is expected that as an individual's experience increases, so too does the possibility of project success. In addition, it is important to mention that aspects of individual experience in the context of this study might include technical requirements, quality standards and environmental regulations. Being without knowledge in the three areas, a project may be significantly delayed; it may have major cost overruns, or have major legal problems, etc. Experience with project-related activities provides individuals with opportunities not only to build upon, but also to learn from prior mistakes, which reduces the possibility of repeating already made mistakes (Argote 1999; Haas 2006). Many researchers concluded that with growing experience, individuals are expected to become more proficient and to develop effective routines for successfully completing improvement projects (Huckman and Pisano, 2006; Huckman et al. 2009; Lapre and Nembhard, 2011; Pisano et al. 2001; Reagans et al. 2005; Shafer et al. 2001).

It is important to add that the researcher also observed an alternative explanation of the industry-specific experience factor found in case studies 2 and 3. According to one of the lower performing case studies, individuals in the project team might have not benefited from knowledge generated by other members of the organization (Anand et al. 2010; Fiol and Lyles, 1985; Lapre and

Nembhard, 2011; Reagans et al. 2005). The researcher considered a link to organizational experience. One interviewee stated:

- *All of the team members were new to the sewerage industry and had little experience [including their company]. The management wanted to go into this industry so this was our first project.* (Contractor PM, C3-CL-IN3)

The archived project documentation might have provided an effective organizational memory of both “hard” and “soft” task-related information and knowledge (Faraj and Sproull, 2000; Haas 2006; Huber 1991; Kim 1993; Yao et al. 2012). The reason behind this is the opportunity for individuals to access and make use of a variety of prior project-related materials, including project planning documents, detailed description of analyses conducted, documented learning, etc. One interviewee stated:

- *The team [the contractor] was very good and had many years of experience, as the company was specialized in this type of work.* (Consultant Project Manager, C2-CL-IN2)

This kind of culture of creating and disseminating project-related knowledge is definitely pervasive. When it comes to soft information, it is important to say that individuals could have accessed the project database to identify experts with respect to a particular issue. Using access to such organizational experience, team members might have given a better sense as to what it is that works and what does not, and therefore they do not have to experiment with every possible routines (Reagans et al. 2005). To summarize, as organizational experience grows, the opportunities for individuals to benefit from knowledge accumulated grows too. It is important to say that simultaneously organizations tend to have worked out the “bugs” associated with training, and often have employees that are receptive (i.e., “bought in”) to the improvement process (Benner and Tushman, 2002; Reagans et al. 2005; Upton and Kim, 1998). Researchers expect increasing levels of available overall knowledge stemming from projects conducted prior to the focal project to correspond to increasing project success. Accordingly, in case study 2, organizational experience for the assigned contractor might have been strong due to the fact that the contractor had previous long experience working on similar highly technical projects. One of the interviewees stated:

- *The team [the contractor] was very good and had many years of experience, as the company was specialized in this type of work.* (Consultant Project Manager, C2-CL-IN2)

For the Team Familiarity factor found in case studies 2 and 3, in both the low-performing and high-performing project cases, the team familiarity factor was shown to influence project success. It has also shown that this type of experience influenced the project team planning capability (discussed next), which proved to be one of the determining factors that had an influence on project success. Therefore, based on the cross analysis, confirmation can be made that there is a relationship between team familiarity and project outcome. Scholars that focused on team effectiveness have stated that teamwork frequently includes inter-reliant tasks, and that team-level factors may be significant in team performance overall. One of the factors is the experience working together (Hackman 2003; Hackman and Wageman, 2005; Choo et al. 2007a; Faraj and Sproull, 2000). Under specific circumstances when team members have spent some time working together formerly, it is not surprising that coordination losses may be diminished and factors such as team unity may rise since any associated issues will probably be “worked out” formerly (Banker et al. 2001; Huckman et al. 2009; Reagans et al. 2005; Tuckman 1977). Moreover, this understanding will possibly encourage trust among team members, which enables the quantity and quality of information shared (Edmondson 1999; Lapre and Nembhard, 2011; Uzzi 1997). As stated by Reagans et al. (2005) and Huckman et al. (2009), the team’s familiarity in the industry for this project could help encountering the indicated quality, as the sort of work in case study 2 is reflected to be particular and practical as team members had spent some time together before the present project. One of the case interviewees stated:

- *The team was very good and had many years of experience, as the company was specialized in this type of work.* (Consultant Project Manager, C3-CL-IN2)

When going back to the review literature regarding research in the last decade on learning-by-doing (Alzahrani and Emsley, 2013; Cooke-Davies 2002; Duy et al. 2004; Easton and Rosenzweig, 2012), one may conclude that it highlighted the important role of investigating various measures of experience and their relationship to the project performance. Easton and Rosenzweig (2012) studied the role of individual experience, organizational experience, team leader experience, and experience working together on a team (team familiarity) in the context of improvement teams was presented. The most important analysis of their study was based on archival data generated

by these improvement project teams over a six-year time span. In the end, findings indicated that out of four experience variables that were studied, team leader experience displayed the strongest relationship with project success; the variable that followed was organizational experience. Contrasting previous studies on work teams, no relationship between individual experience or team familiarity and project success was found, beyond that explained by team leader and organizational experience. However, the current research showed a relationship between individual experience and team familiarity with project success, and managed to extend results from this study to another setting such as the research context. It is important to add that many studies have related experience and improvements through time in different business contexts (Ittner et al. 2001; Lapré. at al. 2000; Lapré and Van Wassenhove, 2001). Most of these studies relied on measurement methods such as cumulative production volume, or prior completed projects were used for experience quantification. In line with this, Reagans et al. (2005) studied the effect of experience with performing joint replacement surgeries on procedure completion time. The study highlighted different types of experience such as individual experience, organizational experience, and experience working together on a team. In the same time, these types of experience contribute to performance. A good example is in the study of Huckman et al. (2009) who stated that team familiarity and the role experience of individuals within a team (e.g., project manager) progress operational performance through time. Another example has been provided by Easton and Rosenzweig (2012) who also highlighted the importance of team familiarity in the context of improvement teams beside other types of experience presented above. The four cases under investigation of the present study managed to extend results from these studies to another setting such as the public sector as recent learning-by-doing research highlights the importance of examining multiple measures of experience and their relationship to the performance of work teams. The findings of the investigation showed the role of individual experience, team leader experience, organizational experience, and experience working together on a team (team familiarity) in the context of project team in the utilities industry. The responses from the interviews in Table 6.4 show many statements coming from different sources supporting the importance of the three themes for project success. These answers are strong enough to stand on their own, however, and therefore further validation and confirmation in the next chapter will give more confidence.

**Table 6.4: Statement supporting the importance of Themes 2, 3 and 4**

Theme	Supporting Statement
Team Familiarity (Theme 2)	<ul style="list-style-type: none"> <li>•The team experience [working together] was excellent, which enabled them to execute the project successfully and smoothly. (Client Project Manager, C2-CL-IN1)</li> <li>•The team was very good and had many years of experience [working together], as the company was specialized in this type of work. (Consultant Project Manager, C2-CL-IN2)</li> <li>•Doing so many projects [together] with the same nature is actually a good hand on training. (Consultant Project Manager, C2-CL-IN2)</li> <li>•It was not so good [working together]. They used to just raise the problem and not trying to solve and that is it. For example, they will raise problem for any major or minor activities such as excavation. (Client PM, C3-CL-IN1)</li> </ul>
Individual Experience (Theme 3)	<ul style="list-style-type: none"> <li>•Every work was assigned to the member who is specialized and we had good number of people throughout. (Contractor Project Manager, C2-CL-IN3)</li> <li>•DC stated that due to the lack of experience of the foreman and skilled labours, there is no significant progress. (Case 3-Progress Meeting 34)</li> <li>•The project manager was not qualified and his team was not qualified. (Client PM, C3-CL-IN1)</li> <li>•The team responsible for the hands on work was weak and were not good enough to work. (Consultant PM, C3-CL-IN2)</li> <li>•This is pure technical work so the project team's technical skill [skill of all individual] should be high and it was high. (Contractor Project Manager, C2-CL-IN3)</li> <li>•The team was so strong [all individual experience of members] to drive the project by themselves. (Consultant Project Manager, C2-CL-IN2).</li> <li>•They [project team members] did not have previous experience in the sewerage so they lacked the technical competencies. (Consultant PM, C3-CL-IN2)</li> <li>•As I mentioned, this was our first project and the team needed more similar project to build their competency and skill. (Contractor PM, C2-CL-IN3)</li> </ul>
Organization Experience (Theme 4)	<ul style="list-style-type: none"> <li>•The team [the contractor] was very good and had many years of experience, as the company was specialized in this type of work. (Consultant Project Manager, C2-CL-IN2)</li> <li>•Because [low project performance] Al Jabir contracting company project in the sewerage industry is little. (Client PM, C3-CL-IN1)</li> <li>•All of the team members were new to the sewerage industry and had little experience [including their company]. The management wanted to go into this industry so this was our first project. (Contractor PM, C3-CL-IN3)</li> <li>•They [the contractor company] did not have previous experience of sewerage so they lacked the technical competencies. (Consultant PM, C2-CL-IN2)</li> </ul>

#### 6.2.4 Implementation Intention (Theme 9)

The interviews, the review of the main themes presented above and notes from the research diary highlighted alternative linking points and useful explanations to answer research question 1. These linking points are between the problem solving, planning, and acquisition of skills and social

support (in the form of knowledge sharing). This link led to the topic of “implementation intension” that the researcher did not initially anticipate.

One of the high-performing project case (study case 4) provided data showing that due to the better planning by the assigned project manager, the issue with lack of resources was partially overcome and the project was completed as stated below:

- *With my limited number of resources, I was able to complete the project.* (Contractor Project Manager, C4-CL-IN3)

When cross-analyzed with the other perceived high-performing project case (study case 2), evidence shows indication of good communication planning and planning for major milestone which is obtaining construction permits as stated below:

- *They did not have problem with permit and approval and things went good maybe due to good technical skill, knowing the regulations and good relationship with them.* (Consultant Project Manager, C2-CL-IN2)
- *Communication was professional.* (Consultant Project Manager, C2-CL-IN2)

However, when the perceived low-performing project cases (study case 1 and 3) were revisited and further analyzed, an assumption was made by the researcher that due to the perceived weak industry specific experience, proper planning for recruiting and assigning an experienced team was not achieved:

- *ADSSC/DC displayed their concern that no action has been taken yet with regards to the solution promised by the contractor to solve the sudden reduction of manpower issue.* (Case 3-Progress Meeting 28)
- *They did not have previous experience in the sewerage so they lacked the technical competencies.* (Consultant Project Manager, C3-CL-IN2)
- *Yes except the 2nd team leader as compared to the first one assigned. The 2nd team leader might even affect the project negatively.* (Client Project Manager, C1-CL-IN1)
- *Yes. They did not have a local experience.* (Client Project Manager, C1-CL-IN1)

A part of project planning is resource planning to ensure adequate manpower and equipment throughout the project and to avoid lack of resources that may cause a delay and therefore affect

the project time. This confirms what was found in the literature, which indicates that planning capability is another prime success factor for a project. The following points summarize the finding based on looking at the data in divergent ways:

- Lower performance project cases showed no direct evidence of contractor planning capability but indirect influence of contractor failure to plan for immediate replacement of project manager and obtaining permits from other authorities in a timely manner caused project delay.
- Higher performance cases showed evidence that proper planning for resources and equipment by the project contracted helped in project time success.

Considering what was discussed in the literature review chapter, research has mainly concentrated on cognitive aspects of planning, that is, related to problem recognition by individuals, formulation of initial plans, plan improvements, and finally how plans are implemented. We can find the main definition of planning in many studies (Burke 2013; Lester 2006; Mumford et al. 2002; Osburn and Mumford, 2006; Patalano and Seifert, 1997; Kerzner 2013) and it is often defined as “a mental simulation of future actions used to organize effort towards goals achievements”. However, Mumford et al. (2002) created a full literature review on creative cognition models, and they found that implementation planning is one of the most used models of creativity integrated in such studies. The researcher viewpoint is that planning contributes to creative problem-solving process at much earlier stages and not only influences the implementation of innovative ideas. When the task is complex, an individual will show their creativity to bring a useful solution (Burke and Barron, 2014; Hicks 2013; Proctor 2014). Apparently, a plan that is developed with the purpose to implement this solution represents an element of this generation process. A number of studies have placed more emphasis on the relationship between creative problem solving and planning recently (Burke and Barron, 2014; Choo et al. 2007; Glover et al., 2013; Hicks 2013; Mumford et al., 2002; Osburn and Mumford, 2006; Proctor 2014). Planning can allow advanced and well-organized problem-solving through various ways. Choo et al. (2007) recognized that it can be done through the identification of critical resources. Another way is through organizing the ideas as they are developed. Finally, it can be done through the acquisition of skills and social support (Thamhain 2003). Considering the argument on knowledge sharing presented below for Theme 7, implementation intentions can influence plan development (Gollwitzer and Schaal, 1998; Osburn and Mumford, 2006). In regard



to that, the attempt to find an answer to research question 1 on how human capital intangible resources influence project success, the project planning, problem solving creativity, and implementation intentions relationship and their effect on project success were inspected during the cross-case phase and found to agree with the finding of Caughron and Mumford (2008) affirming that participants with implementation intentions will generate more creative solutions than participants without implementation intentions. The responses from the interviews in Table 6.5 show one ambiguous statement coming from one source supporting the importance of implementation intention for project success. This answer is not strong enough to stand on its own and therefore require further validation and confirmation in the next chapter.

**Table 6.5: Statement supporting the importance of Implementation Intention**

Theme 9	Supporting Statement
Implementation intention	<i>ADSSC/DC displayed their concern that no action [and intention] has been taken yet with regards to the solution promised by the contractor to solve the sudden reduction of manpower issue. (Case 3-Progress Meeting 28)</i>

### **6.3 Organization Capital Finding and Discussion – Study Objective 2 / Research Question 2**

The cross-case analysis has also confirmed three themes found in the previous chapter and revealed an initial finding and one main theme related to organization capital. This theme can potentially provide more evidence for and good explanation of research question 2 of the study. The researcher discussed the research evidence comprising the influencing factors and quotes from the case study research, and the theme related to the organization capital category were presented as follows.

#### **6.3.1 Motivation Misalignment (Theme 6)**

The low-performing project case provided evidence that showed the low motivation of the project team resulted in the inability to solve problems promptly in order to avoid delay as stated below in the two low performing cases:

- *We actually had to motivate the contractor team. They were depending on the head office in Singapore which is was not close to them and was not close to the project. (Client Project Manager, C1-CL-IN1)*

- *Not motivated. They gave us problems all the time. We really suffered a lot in this project from these human factors.* (Client Project Manager, C3-CL-IN1)

When cross-analysed with the high-performing project case, evidence from interviews showed a higher motivation positively affecting project performance as stated below in one of the high performing cases (case study 2), and assumed by the researcher to be motivated due to the fact that they managed to execute the project while they were in short of manpower (case study 4):

- *Team seems to be motivated to successfully complete the work on time. This was felt from their communication with us.* (Client Project Manager, C2-CL-IN1)
- *With my limited number of resources, I was able to complete the project.* (Consultant Project Manager, C4-CL-IN3)

Therefore, team problem-solving ability is a process to accelerate projects and to improve project outcomes. Project teams who generate fast solutions can solve operational and technical problems in a timely manner. This can vastly improve both the speed and quality of projects. Team problem-solving competency requires that a team be motivated, as without strong willingness to perform and dedication to the success of a project by the manager and his team members, problem solving may not be achieved. The following points summarize the finding based on looking at the data in divergent ways:

- Lower case performance showed slow progress due to lack of contractor's team motivation.
- Higher case performance showed better progress due to no team motivation issue.
- Both pairs showed evidence of the problem solving issue.

As stated in chapter 5, a significant aim of an operative strategy is the association of the project participants' effort to project aims. The method should be planned to inspire the contractor to behave realistically to accomplish common aims, and the greatest result within the estimated risk (Turner, 2004) as stated below in one of the lower performing cases (case study 3):

- *Giving incentive to the team to learn could have improved their learning as they will be more motivated to solve problems and issue.* (Contractor PM, C3-CL-IN3)

Consequently, project risk should be assigned and accomplished in line with its capacity to encourage balanced behaviour and collaboration. Numerous projects, mainly those that apply a performance-based encouragement mechanism (such as in case study 2), require higher-order goals and deliver the project team the intended option to struggle for these goals (Rose and Manley, 2010). Deprived of incentives and an insight by participants that they can regulate the project risks related with objective accomplishment, a failure to accomplish similar goals is probable.

These results bring us to the work motivation theories. Several current efforts have been made to develop work-motivation theories, to increase their practicality for practitioners and to incorporate theory principles to advance applicability (Locke and Latham, 2004). The development of motivation theory has led to two key theory branches that presently direct the organizational management literature and might be used to examine motivation at the organization level of analysis. Theories mentioned goal setting and organizational justice (Latham and Pinder, 2005). Organizational justice includes three main categories: distributive justice, procedural justice and interactional justice (Cohen et al. 2001). Altogether, goal commitment and these three categories of justice include four main pointers of motivation at the organizational level. These pointers are used to discover motivation drivers. Up to now, in the study of these 4 cases, there is an indication that can be related to distributive justice is present as specified below in one of the higher performing cases (case study ):

- *Our team was motivated throughout the project and we give appreciation letters and incentives.* (Contractor PM, C2-CL-IN3)

Consequently, a financial incentive system has to be set at a suitable amount to recompense equally for contractor project team risk and to encourage effort. Incentive amount is a key factor of a contractor project team's level of effort. The reason for this we can find in that a higher amount (more money per unit of effort) raises the contractor's project team's income (Zenger and Marshall, 2000). So, the incentive has to be big enough to stimulate the contractor project team (based on the effort/cost to achieve). Distributive justice principles give support to this. Consistent with justice theory, founded on Adams's (1963) equity theory, if the amount of a financial incentive does not equally connect with the anticipated level of performance, in relation to the incentive presented and distributed, it might decrease motivation.

It is interesting to compare this finding with Rose and Manley's (2012), who also used four key indicators of motivation at the organizational level that are based on goal commitment and the three types of justice mentioned above. In their case study of an infrastructure project in Australia, a range of negative motivation drivers such as: inequitable contractual risk allocation; late involvement of key stakeholders; inconsistency between contract intentions and relationship intentions; inadequate price negotiation; inconsistency between the project performance goals and incentive goals; and unfair and inflexible incentive performance measurement processes can compromise incentives provided to contractors and consultants that are responsible to achieve above business-as-usual performance. Subsequently, as part of research question 2 answers on how the organizational form of intangible resources influences project success in the public sector, this finding coming from these study cases under investigation related to motivation misalignment agrees with Rose and Manley (2012) results. Therefore, realizing the generalizability of the findings is significant since bringing into line the motivation of contractors and consultants to perform better than 'business-as-usual' on a public sector project is a compound responsibility and the expenses of failure are high as misalignment can find middle ground for project outcomes. The replies from the interviews in Table 6.6 show two statements coming from two different sources supporting the importance of motivation misalignment for project success. Nevertheless, these replies are not solid enough to stand by themselves and therefore necessitate additional authentication and confirmation in the following chapter.

**Table 6.6: Statement supporting the importance of Motivation Misalignment**

Theme 6	Supporting Statement
Motivation Misalignment	<i>Giving incentive [aligning an objective with motivation] to the team to learn could have improved their learning as they will be more motivated to solve problems and issue. (Contractor PM, C3-CL-IN3)</i>
	<i>Our team was motivated throughout the project and we give appreciation letters and incentives [aligning an objective with motivation]. (Contractor PM, C2-CL-IN3)</i>

### **6.3.2 Monitoring and Control Strategy (Theme 11)**

Initially, the monitoring and control strategy argumentation was not clear to the researcher, but after continuing the analysis of the top management factor above and reviewing recent literature regarding the effect of monitoring and control strategy on project success, it became clear that the

role of monitoring and control strategy is an influential factor in these 4 study cases as stated below in both of the higher performing cases (case study 2 and 4):

- *Internal control is crucial part of the project. Through frequent meetings, strict schedule and efficient cost control, we were able to do a very good project control.* (Contractor PM, C2-CL-IN3)
- *To escape the problem with this, we highlight the importance of this in almost all of our meetings so we are able to control and monitor it.* (Client PM, C2-CL-IN1)
- *And as stated below in both of the lower performing cases (case study 1 and 3):*
- *So no proper control from the head office for the procurement.* (Client PM, C1-CL-IN1)
- *It took much effort from us to make them aligned to the internal control process as their people were not qualified enough for this project.* (Client PM, C3-CL-IN1)

In these cases, the monitoring and control strategy was shown in the form of periodical project progress meetings. Both high and low performing project cases provided evidence and showed practices related to monitoring and control strategy being followed throughout the projects' life cycle. Site visit, site meeting, interim valuation and financial statement were chosen as the variables for project monitoring. For project control, rescheduling activities, reallocating resources and altering project objectives were chosen as the variables. The fourth project control is the project monitoring and control process that involves the project's work programme update. Thus, programme updating, project plan review, project objective review and project scope review were selected as the project control variables. Because of this, the focus is on comparing the level and effectiveness of the client and consultants' project monitoring and control on the assigned contractors. This supports establishing whether the project monitoring and control efforts of the client and consultant contributed to an improved project outcome. Progress meeting reports reveal that the frequency of conducting progress meetings and site visits for the perceived lower performing cases was less than that for the perceived higher performing cases. However, the frequency for interim valuation and financial statement did not show any divergence as those were included in the progress meetings. Next, the outcomes indicate that the perceived higher performing cases tend to conduct programme updating and project plan review more frequently than the perceived lower performing cases where review of project objective and project scope frequency was similar in both groups. In that case, the analysis of the relationship between the project monitoring and control strategies and the outcomes of the projects carried out by the two

categories of projects provides an additional answer to research question 2. The outcomes of this comparison show that the frequency at which progress meetings and site visits are conducted have a major effect on the percentage time overrun to the initial contract period. These results indicate that the number of times programme updating and project plan review were carried significantly influences the percentage time overrun of the initial contract period.

These findings were the subject of (Idoro 2012) study conducted with Nigerian contractors to measure improvements of project outcomes. The purpose of the study was to match the rates of project monitoring and control strategies usages their influence on project outcome. Findings showed that out of eight monitoring and control strategies only three influenced the project outcomes. This gives us conclusion that some of the strategies effect project outcomes while others do not. This study also had its limitations. One of them is that structured questionnaire survey cannot answer how and why questions. Also, it was hard to generalize findings for different study settings thus, there was a need for further research that would bring findings from other cases such as these cases under investigations and provide explanation of these 3 strategies. The responses from the interviews in Table 6.7 shows 2 statements coming from 2 different source supporting the importance of Monitoring and Control Strategy for the project success. However, these answers are not strong enough to stand by their own and therefore require further validation and conformation in the next chapter.

**Table 6.7: Statement supporting the importance of Monitoring and Control Strategy**

Theme 11	Supporting Statement
Monitoring and Control Strategy	<i>Internal control is a very important part of the project. Through frequent meetings and strict schedule to follow, we and good cost control were able to do a very good project control. (Contractor PM, C2-CL-IN3)</i>
	<i>To avoid facing problem with this, we use to highlight the importance of this in almost all of our meetings so we were able to control and monitor it. (Client PM, C2-CL-IN1)</i>

### **6.3.3 Top Management Support (Theme 6)**

Another, but critical, answer and explanation found for research question 2 is the top management support. The low performing project cases provide evidence showing that, due to

weak management support, there was an issue with the resources and equipment that affected the project time as stated below:

- *But the home office was delaying the material procurement. And this is was one of the major problems. (Client PM, C1-CL-IN1)*
- *The home office support was very weak mainly because of bad management. But the management was not there. The team's experience and management were weak. The managerial support was weak. The factor that may affect the project negatively is management. (Client PM, C3-CL-IN1)*

When compared the high performing project cases, evidence from one case study (case study 2) showed a significant role of stronger management support to the project team and was provided throughout the project lifecycle as stated below:

- *Management was from the client side and contractor side was good as they supported the team throughout the project. (Consultant PM, C2-CL-IN2)*

The other high performing case (case study 4), however, showed that weaker management support might have affected the project outcome negatively if the factor related to theme 1 was not there to provide a backup. These two statements explain:

- *Management support was not that good; otherwise they would have done something with the issue of resources and equipment. (Client Project Manager, C4-CL-IN1)*
- *With my limited number of resources, I was able to complete the project. (Contractor Project Manager, C4-CL-IN3)*

However, management support can also be in the form of assigning adequate manpower such as the assigned competent project manager who managed to complete the project successfully despite the lack of resources as stated below:

- *With my limited number of resources, I was able to complete the project. (Consultant Project Manager, C4-CL-IN3)*

Based on the above, the following points summarize the finding based on looking at the data in divergent ways:

- The higher performance pair showed direct evidence of contractor's management support affecting the project outcome.
- The lower performance pair showed direct evidence of contractor's management support affecting the project outcome.

As a result, ensuing the understanding of the top management support provided in the former chapter, it was suggested that top management support is vital in every case and delivers a solid clarification of why the projects succeeded or failed. This might be understood evidently by comparing case study 3, which was a complete failure, and case study 2, that was performed better. Case study 3 project had no management support at any level. Case study 2 project had comparatively a sturdier sponsor. The top management support existed through the whole project and the project was completed better than others. It had a strong sponsor and a supportive CEO. Case study 1 confirms the primary importance of the project sponsor and the top management in Singapore, where case study 4 confirms the secondary importance of the other top managers to actively intercede when necessary.


Previous research studies showed how important top management is to project performance. Young and Jordan (2008) explained in their study that we can find strong evidence that top management support is a critical success factor for project success. Also, another study by (Young and Poon, 2013) extended (Young and Jordan, 2008) study and provided strong empirical evidence of the importance of top management support for project success. Methodology of the study was organized around case study method with the objective to generalize theory. The main limitation of the study was inadequate types of project that were tested. Only intra-organizational projects were reviewed and three of them were connected to the implementation of an ERP package, one related to a system rationalization and one related to an in-house development project. Those cases also make available good evidence that supports top management support as the most important CSF for ERP implementations. For other types of projects more evidence was needed. Also, evidence that has to be demonstrated in future studies is that top management support would be recognized as even more important for inter-organisational projects such as the four cases under investigation here. This kind of study can deliver important implications for board, senior management and project management practice and academia. Boards and top managers possibly will accept that they individually have the greatest effect on project success or failure.



Boards, top managers and their advisors also will have to accept that the present professional assistance has not as much effect on success as formerly supposed, for the reason that a business rather than a project/technical focus is essential. Project managers have to distinguish the limitations of project methodologies and let projects concentrate on project success rather than project management success even though they cannot be accountable for the realization of outcomes/benefits.

Interestingly, previous study by Barney (2001) supports the above view point. The study utilised the RBV to describe the main characteristics of strategic assets addressed in the literature. It showed how important an organizational focus (including the form of top management support) is to achieve competitive advantages. In his VRIO model, it is assumed that when a resource is only valuable, it leads to competitive parity where both value and rarity are required for a temporary competitive advantage. Value, rarity, and inimitability are required for a sustained competitive advantage (Barney 1998). An organizational focus (such as top management support) is necessary to both develop a competitive advantage and sustain it (Barney 1998). Therefore, in order to frame the current research study and developed the model and link it to the theoretical models of the RBV by linking the four categories of intangible resources to project success and established relationships among themes, the researcher adopted Barney's VRIO framework. The concept of VRIO is presented in table 6.8.

**Table 6.8 VIOR Barney's Table**

<b>Valuable?</b>	<b>Rare</b>	<b>Difficult to Imitate?</b>	<b>Supported by Organization?</b>	<b>Competitive Implications</b>	<b>Performance</b>
No	—	—		Competitive Disadvantage	Below Normal
Yes	No	—		Competitive Parity	Normal
Yes	Yes	No		Temporary Competitive Advantage	Above Normal
Yes	Yes	Yes		Sustained Competitive Advantage	Above Normal

The responses from the interviews in Table 6.9 show three statements coming from three different sources supporting the importance of top management support for project success. These answers are strong enough to stand on their own, however, and therefore further validation and confirmation in the next chapter will give more confidence.

**Table 6.9: Statement supporting the importance of Top Management Support**

Theme 6	Supporting Statement
Top Management Support	<i>But the home office [top management] was delaying the material procurement. And this is was one of the major problems. (Client PM, C1-CL-IN1)</i>
	<i>The home office [top management] support was very weak mainly because of bad management. But the management was not there. The team's experience and management were weak. The managerial support was weak. The factor that may affect the project negatively is management. (Client PM, C3-CL-IN1)</i>
	<i>Management was from the client side and contractor side was good as they supported the team throughout the project. (Consultant PM, C2-CL-IN2)</i>

## 6.4 Relationship Capital Finding and Discussion – Study Objective 2 / Research Question 3

The cross-case analysis has also confirmed the one theme found in the previous chapter related to organization capital. This theme can potentially provide strong evidence and good explanation for research question 3 of the study. The researcher discussed the research evidence comprising the influencing factors and quotes from the case study research, and the theme related to the relationship capital category was presented as follows.

### 6.4.1 Joint problem solving (Theme 8)

While trying to search for the joint problem solving factor discussed in case study 4 at the relationship level, the researcher observed that interviewees of the three other cases referred to ideas associated with relationship, cooperation, coordination, trust, delay, permission, Internal

control, communication, problem solving, connection between team project team, action sharing, and knowledge sharing. Furthermore, while comparing both groups, the researcher observed that one of the high-performing project cases (case study 4) provided evidence showing project outcome was influenced by relationship between the contracting parties. The relationship between the three contracting parties might have been good as was felt from the statement given by one the interviewees:

- *We kept an eye especially on this [a problem] as they were many of them. That is due to the controlled plan we set.* (Consultant Project Manager, C4-CL-IN2)

When compared with the other high-performing project case, evidence showed confirmation regarding how good the relationship, communication and cooperation were between the contracting parties and the influence of this factor on project time as stated below:

- *Excellent communication was one of the main drivers for the project success.* (Client Project Manager, C2-CL-IN1)
- *Excellent communication shown to ADSSC throughout the project.* (Client Project Manager, C2-CL-IN1)
- *Communication was professional.* (Consultant Project Manager, C2-CL-IN2)
- *Project team has Good business conduct and professionalism with ADSSC.* (Client Project Manager, C2-CL-IN1)
- *I felt that there was Very good cooperation between project team members.* (Client Project Manager, C2-CL-IN1)
- *We understand the importance of the control so we decided to do weekly monitor to overcome any issue quickly.* (Contractor Project Manager, C4-CL-IN3)
- *To avoid facing problem with this, we use to highlight the importance of this in almost all of our meetings so we were able to control and monitor it.* (Client Project Manager, C4-CL-IN1)

When compared the low performing project cases, evidence from both case studies (case studies 1 and 3) showed a weaker relationship between the contracting parties, in particular, between the client/ consultant and the assigned contractor as the communication level was weak as stated below:

- *The head office was in Singapore and team assigned was here so the communication was slow which affected the project. (Consultant Project Manager, C1-CL-IN2)*
- *Communication with international company whose head office in Singapore was a problem as they are not here in the project. (Client Project Manager, C1-CL-IN1)*
- *We had to conduct many progress meeting and give them guidelines in the planning but the problem is that they could not understand our guidelines and recommendation and their feedback was weak. (Client Project Manager, C3-CL-IN1)*

Therefore, this factor is considered influential and valid by the researcher, because relationship between contracting parties was confirmed by both groups. The following points summarize the finding based on looking at the data in divergent ways:

- The higher and lower pair both provided evidence of the importance of relationship.

The strong relations between the contracting parties result in time efficiency because this factor tightens the coordination among the member groups (Ebbbers and Wijnberg, 2009). In addition, this tool assists in a smoother transition to any contingency plans (Uzzi 1997). The level of relationship among the parties is a determinant on how well the parties place work with their network (Granovetter 1985) and how pleased they are with the outcome (Uzzi, 1997). The trust formed due to the close relations lead to more loyalty (Uzzi 1996) and forms a ground for contract management to build upon (Ebbbers and Wijnberg, 2009). The following case is an example:

- *To avoid facing problem with this, we use to highlight the importance of this in almost all of our meetings so we were able to control and monitor it. (Client Project Manager, C4-CL-IN1)*

An essential factor to enhance relations is for the contracting parties to be considerate. Once the parties are fully aware of their responsibilities and the ultimate goal, results similar to the cases stated below are visible:

- *We kept an eye especially on this as they were many of them. That is due to the controlled plan we set. (Consultant Project Manager, C4-CL-IN2)*
- *The internal control by the client and the contractor was good which made the project successful. (Consultant Project Manager, C2-CL-IN2)*

The work of Ning and Ling (2013) has shown that in order to form strong relations, the parties should be able to openly talk and discuss with each other. The analysis enables them to deal with the problems of the other party because they are already aware of the other's concerns. Establishing an efficient communication channel has various advantages to the success of the relations among the contracting parties. A good quality relation lowers the likely hood of facing challenges (Wong and Cheung, 2005), helps in preventing any misinterpretation and procrastination of the work (Love et al. 2010), and rapidly settles divergence (Wong and Cheung, 2005). These factors act to ease the progress of networking. The outcomes prove that timely project information (Macneil, 1986b) is necessary to strengthen the relationships as expressed below in the case:

- *We dedicated a member only looking after this [monitoring and control]. Team was always in good relation and we managed to improve the average progress as we put more focus and works started to open.* (Contractor Project Manager, C4-CL-IN3)

Once strong communication is established the transaction of information is precise and on time. The prerequisite of precise and objective information assists in improving the trust among the parties. Furthermore, the clients as a whole will be able to foresee prospect issues in advance.

The contract has to be designed in a way that the parties can explicitly understand the terms and conditions as well as the tasks delegated. Taking this format into account increases commitment and prevents the possibilities of the parties acting for their own interest (Williamson 1985). Moreover, contracts form channels which help the parties harmonize with the works of different contracting parties (Jap and Ganesan, 2000; Mellewigt et al. 2007). This prevents dispute that may rise in terms of cost and consequently, fosters cost control. Parties having fair shares of risk give the guarantee that the rewards of their achievements will be proportional. With an agreement to equally share the profit and the loss, none of the parties can gain advantage over one another by transferring the costs (Love et al. 2010). By doing so, the parties will be more willing to connect and focus on benefiting as a whole. Moreover, this commitment assists in time management. When criteria to evaluate the performance of the accomplishments are used, the parties are willing to comply and avoid possible oppositions. Furthermore, the alignment of objectives prevents any time loss due to the conflicts which could have been seen if the parties were striving for their own interests rather than the overall benefit. When an unforeseen situation occurs, the

mutual goal is used as a guide in finding a prompt answer to what is being faced. This situation can be seen in the following statements made in the high performing cases:

- *Due to team technical strength, they were able to solve technical issues and come up with an effective solution.* (Client Project Manager, C2-CL-IN1)
- *Yes sure. If the project leader can solve issues and empowered by the company.* (Consultant Project Manager, C4-CL-IN2)

Also, a noteworthy amount of time efficiency is visible when the parties are working collectively rather than individually. Once they realize the existence of a problem they coordinate to solve it, which results in timely project completion. This cooperation promotes a mutual communication, fostering good relationships throughout the project lifetime. When problems occur, the relationship between the parties can act as a means to swiftly solve the problem and cause no harm to the progress of the project. In addition, enabling the parties to have an adequate amount of flexibility helps them find alternative paths as a solution to the problem and thus saves time. The pace and the level of conflict among the parties are dependent on how they approach solve ambiguous issue when the contract is incomplete (Baker et al. 2002). Joint coordination requires the contracting parties to devote more time in order to reach an agreement accepted by members. On the other hand, trying to reach unanimity when the contract is adjustable is a time loss which can affect project progress.

In conclusion, evidence from this cross case analysis found that relationship quality has a significantly positive influence on joint problem solving. It indicates that public projects can enjoy the benefits from good relationships, which provides a positive answer to the third research question. To nurture relationships, it is suggested that contracting parties should share information in an effective manner. In addition, managers should pay greater attention to maintaining relationships during dormant periods. Building a solid reputation will help a company to sustain its influence in the industry. Information sharing gives rise to better relationships. Along with the study conducted by (Ning and Ling, 2013), this finding presented to answer research question with how answer and why questions contributes to the knowledge by showing that embedded network theory and relational contract theory are applicable to public construction projects, even though public clients must maintain arm's-length relationships. However, it is not surprising to find that the finding of these four cases under investigation confirmed the

conventional wisdom that joint problem solving could lead to better performance (Cheng et al. 2000; Rahman and Kumaraswamy 2005) where the findings of (Ning and Ling, 2013) surprisingly depart from this wisdom given that the use of a structured questionnaire survey might have caused limitations to show that strong relations between the contracting parties may result in time efficiency because this factor tightens the coordination among the member groups (Ebberts and Wijnberg, 2009) and smothering transition to contingency plans (Uzzi 1997). The responses from the interviews in Table 6.10 shows 4 statements coming from 3 different source, but one single case, supporting the importance of the joint problem solving factor for the project success. However, these answers are not strong enough to stand by their own and therefore require further validation and conformation in the next chapter.

**Table 6.10: Statement supporting the importance of Joint Problem Solving**

Theme 8	Supporting Statement
Joint problem solving	<i>We kept an eye especially on this [a problem] as they were many of them. That is due to the controlled [solving] plan we set. (Consultant Project Manager, C4-CL-IN2)</i>
	<i>We [contracting parties] understand the importance of the control so we decided to do weekly monitor to overcome any issue quickly. (Contractor Project Manager, C4-CL-IN3)</i>
	<i>To avoid facing problem with this, we [contracting parties] use to highlight the importance of this in almost all of our meetings so we were able to control and monitor it. (Client Project Manager, C4-CL-IN1)</i>
	<i>We [contracting parties] dedicated a member only looking after this [monitoring and control]. Team was always in good relation and we managed to improve the average progress as we put more focus and works started to open. (Contractor Project Manager, C4-CL-IN3)</i>

## 6.5 Social Capital Finding and Discussion – Study Objective 2 / Research Question 4

The cross-case analysis has also confirmed the one theme found in the previous chapter related to social capital. This theme can potentially provide strong evidence and good explanation for research question 4 of the study. The researcher discussed the research evidence comprising the influencing factors and quotes from the case study research, and the theme related to the social capital category was presented as follows.

### 6.5.1 Knowledge Sharing (Theme 7)

In the within-case analysis phase in the previous chapter, one of the low-performing project cases (case study 3) provided data showing that due to the weak connection between project members, the team's potency and efficacy was affected, thereby negatively affecting project performance. When cross-analyzed with the other project cases, the researcher observed that interviewees of the three other cases referred to ideas associated with weak learning ability, weak project team, team motivation, team member connection, team efficacy and potency, know-how, problem solving, team environment, specialist members, experience, training, and communication. Remarkably, the professional knowledge and skills of individuals in the project team which were lacking in the two low performing project cases, showed how much knowledge is important and valued in project environments. Hong et al. (2008) presented that project team members' knowledge, tacit knowledge or know-how in particular, and the ability to communicate effectively will result in positive project performance. In the same way, Deeter-Schmelz and Ramsey (2003) claimed that for healthier individual and group level performance, sharing and combining knowledge play a vital role among team members. Therefore, operative knowledge sharing by team members is an essential element in projects that will result in better performance and project success. Project scope can be changed unpredictably and this can influence the team performance and might create stressful situations (Wang and Ko, 2012) as in the case of these two projects as stated below:

- *Proposed construction manager was rejected by AECOM and asked for alternative candidate to be submitted by BSWS. (Case 1-Progress Meeting 13)*
- *ADSSC asked the contractor to submit a recovery plan due to the slow progress. (Case 3-Progress Meeting 14)*

In this kind of situation, Wang and Ko (2012, p. 423) proposed that "undesired consequences may occur if the knowledge cannot be effectively shared among the team", for instance, decreased effectiveness in work will lead to higher chances of failure and delays in deliverables as stated below:

- *The team experience was bad and therefore output and productivity was low. (Client PM, C1-CL-IN1)*
- *Experience was causing the team not to be affective and productive. (Consultant PM, C3-CL-IN2)*



Alternatively, as said by (Hsu et al. 2007), teams which show superior collaboration and knowledge sharing, are expected to decrease doubts and perform better. Also, in order to develop a team and to work on its improvements, vital learning from each project is essential (Ochieng and Price, 2010). This might be developed from sharing of tacit knowledge, for instance, and sharing of “lessons learned” (Goffin and Koners, 2011). As stated by (Sharp et al. 2003), sharing of lessons learned will avoid repetition of activities and make sure that knowledge is used again across projects. Additionally, in a lessons learned record, project team members acquire the knowledge and learning they achieve from the project, naturally prepared when a project reaches accomplishment or a specific milestone is achieved, and is then incorporated into the project documentation (Newell et al. 2006) or shared in post-project reviews (Goffin and Koners, 2011) as indicated in one of the high performing cases:

- *We kept an eye especially on this as they were many of them. That is due to the controlled plan we set.* (Consultant PM, C4-CL-IN2)
- *We dedicated a member only looking after this. Team was always in good relation and we managed to improve the average progress as we put more focus and works started to open.* (Contractor PM, C4-CL-IN3)

Furthermore, some examples of lessons learned that are connected narrowly to the tacit knowledge of project team members are, “dealing with project budgets, problem solving, coping with time schedules, and coping with changes in product specifications” (Goffin and Koners, 2011, p. 300). However, this reflective exercise usually takes place after the completion of a project and, by then, the potential benefits of learning from this valuable knowledge, for the perceived low performing projects, are missed as the contractor and team were new to this kind of project or country as stated below:

- *All of the team members were new to the sewerage industry and had little experience. The management wanted to go into this industry so this was our first project.* (Contractor PM, C3-CL-IN3)
- *This was their first project here so prior to this project they lacked the local experience.* (Consultant PM, C1-CL-IN2)

It was present for some of the perceived high performing projects, as the contractor and team had years of experience in this kind of project, as stated below:

- *The team was very good and had many years of experience as the company was specialized in this type of work. (Consultant PM, C2-CL-IN2)*
- *My team was very competent. We executed many projects before. Mr. Sinan is one of the important members in the team and due his long experience. We got a very competent team and they have long years of experience. (Contractor PM, C2-CL-IN3)*

Other scholars have also presented how reflection is important as being a primary part of active learning. Hammer and Stanton (2009) stated that several failures encountered by organizations and teams can be found in one main reason – failing to reflect. In line with Marquardt (2011), reflection is about “individuals recalling, thinking about, pulling apart, making sense, and attempting to understand”. Pedler (2011: xxi) claims that learning is ‘cradled in the task’ and happens through reflection on the practice of taking action. In the field of experiential learning, Kolb (1984) and Schön (1983), who impacted management education (Reynolds and Vince, 2004), presented how reflection is important in learning. On the other hand, the challenge is that reflection cannot be received easily or naturally by individuals as reflective examination happens when people have the opportunity to stand back and relax their assumptions and expectations (Marquardt 2011). This is even more problematic to be accomplished in team environments where struggles to make reflection often fail (Marquardt 2011), especially in low performing projects as stated below, whereas there was no indication of a such tense environment in the high performing projects:

- *It was felt that the connection between the members was not so good and that made a tense environment which indirectly effected the project progress. (Consultant PM, C3-CL-IN2)*

Since effective team communication is required to improve team planning capability, which can affect project quality and timing, the mentioned factor is considered to be important for project success. Thus, in cross-functional project teams that are designed of numerous individuals with different qualifications, knowledge, skills and expertise, sharing of such knowledge advances project effectiveness, raises the chances of project success and delivers a learning and progress opening for the team members. However, reflective learning cannot take place without reflection, and reflection is a challenging activity, the attempts to which often fail in project environments as stated in one of the low performing cases:

- *They took a lot of our effort to put them in track as far as ADSSC HSE standard and policy.*  
(Client PM, C3-CL-IN2)

Reflection is critical when we want to convert tacit experiences into explicit knowledge (Raelin, 2001) and individuals have a tendency to learn efficiently when they reflect with like-minded colleagues on an actual issue emerging in their organisation (Cho and Egan, 2009). Further, Cumming and Hall (2001) claim that, after an ALS activity has taken place, the set reflecting on the impact of changes that resulted from the activity will enable individuals to learn and benefit from each other as well as provide opportunities for transferring this learning to other parts of their work and life. The low performing project cases evidence shows difficulty in solving problems as stated below:

- *We had a MAJOR issue at the start of the project which was connecting electricity to the project which heavily affected the execution of the project.* (Client PM, C1-CL-IN1)
- *The problem solving ability was an issue.* (Client PM, C3-CL-IN1)

Therefore, social capital increased idea sharing and knowledge management. Also, it contributes to conflict solving, stimulates the learning process and furthermore contributes to incorporate knowledge of strategies (Bueno et al. 2004; Chaminade and Roberts, 2002). Relationships among different occupational groups are based on trust, and shared norms and values (Lesser and Prusak, 1999) and since they can affect the exchange of information and knowledge they are very important for a project team (Inkpen and Tsang, 2005), which was noticed in one of the low performing cases as stated below:

- *It was felt that the connection between the members was not so good and that made a tense environment which indirectly effected the project progress.* (Consultant PM, C3-CL-IN2)

After all, the literature review developed earlier exposes that social capital is related with relational factors, such as “trust, interaction, and shared value or vision” (Di Vincenzo and Mascia, 2012). Consequently, the relational factors turn out to be the key for leaders to realize actual knowledge sharing. When we have situation that social capital is inadequate, knowledge leadership will not then have enough straight advantage for knowledge sharing in the team. Understanding these concepts rationally, the implementation of knowledge leadership is helpful

to knowledge sharing in a project environment. The process of the knowledge leader's support to other members in learning processes will be transmitted into social capital asset, that later on influences knowledge sharing indirectly. We usually have this situation since the effective team leader is in most times a social architect who recognizes the connection of team members and behavioural variables and can raise a climate of dynamic participation and minimize defective conflict (Thamhain 2003). Also, in project environments we can recognize the importance of knowledge, for instance, contractor staff, consultants and third party suppliers could be hired again and again for their specialist knowledge and skills. This kind of diverse knowledge and experience sharing among the project team members can advance performance and result with improved project outcome. When we come to the final stage of the project completion, then project knowledge, experience, problem and best practice sharing comes on the stage usually in processes such as post-project reviews or lessons learned. Learning and reflection are actions that go together, thus learning necessitates reflection. Still, reflection can be a challenging and unusual task, and often we have the situation that efforts to reflect in team environments fail (Marquardt 2011). Using the idea of Action learning (AL), in which learning is present by a team of individuals reflecting on activities and experiences in a jointly supportive environment, reflection, and the consequent learning, might be encouraged and maintained for the project team. Furthermore to the reflective learning, the project team may also gain numerous additional benefits from an AL approach. Many researchers share the same opinion about the integral role of reflection in AL (e.g., Haith and Whittingham, 2012; Pedler 2011; Marquardt 2011; Cho and Egan, 2009; McGill and Beaty 2001; Cumming and Hall; 2001). As stated by Lee (1999), the central dissimilarity between AL and other organised approaches of reflection is the fact that it is present in a jointly supportive group and because it is enabled by a chosen individual. Accordingly, through the reflection in AL, team members get the chance to focus on real issues that are present within their place of work, advance the skills to reveal their own and their colleagues' activities, study from shared experiences and mature further ways of action and decisions. In this study, the findings from the 4 cases under investigation provide an additional qualitative research approach to facilitate effective knowledge sharing, reflection and learning in cross-functional project teams. The responses from the interviews in Table 6.11 show a statement coming from one source supporting the importance of knowledge sharing for project success. However, this answer is not strong enough and ambiguous to stand on its own and therefore require further validation and confirmation in the next chapter.

**Table 6.11: Statement supporting the importance of Knowledge Sharing**

Theme 7	Supporting Statement
Knowledge Sharing	<i>It was felt that the connection between the members was not so good and that made a tense environment [to share knowledge] which indirectly effected the project progress. (Consultant PM, C3-CL-IN2)</i>

## **6.6 Conclusion**

In this chapter, the cross-case and literature comparison phase were conducted to discover more themes as well as avoid reaching false or premature conclusions due to processing information-in a biased way while conducting the within-case analysis in previous chapter. Therefore, it was important to counteract the tendencies by looking at the evidence in divergent ways. The idea behind this phase was to force the researcher to go beyond initial impressions through the use of diverse and structured lenses on the data. The analysis of this chapter confirmed the eight themes found in previous chapter and found three more themes that have the potential to provide answers to research questions 1 and 2.

The theme related to leadership technical skill was found to be an important factor that influenced the outcome for these project cases. This chapter provided more evidence and justification on why the industry-specific skill and experience of the project manager plays an important role in the project life cycle. It departs from the notion that project leaders need to have an understanding of technology, and do not necessarily need in-depth technical skills and knowledge because the use of team members that are subject matter experts can often be an effective technique to supply the required expertise. However, the responses from the interviews are not yet strong enough to stand on their own and therefore require further validation and confirmation in the next chapter. Similarly, Theme 5: Motivation Misalignment, Theme 7: Knowledge Sharing and Theme 8: Joint Problem Solving responses from the interviews are not yet strong enough to stand on their own and therefore require further validation and confirmation.

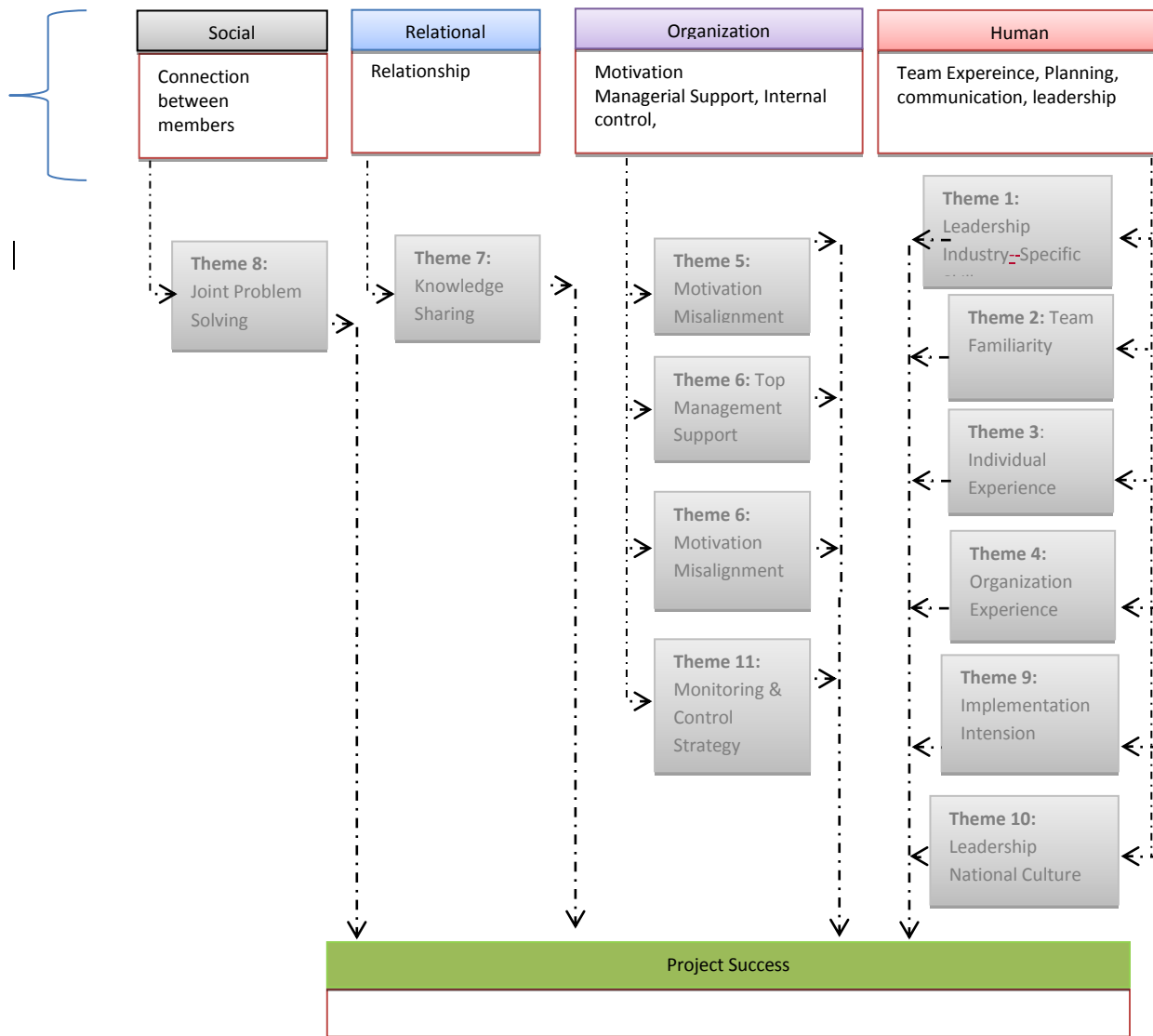
However, the theme related to managerial support was also found to be the most critical factors that influence the outcome for these project cases. This chapter provided more evidence on why top management support plays an important role in project life cycle. However, this finding is

necessarily constrained by the methodology. The case study method was chosen with the objective of generalizing to theory. Hence the greatest limitation is the limited types of project (four cases) that were tested so far. Even though this range of cases provides good evidence that top management support is the most important factor for project implementations, more evidence is needed before we can have the same degree of confidence for other types of projects. Therefore, further research was conducted with different types of project to validate if top management support would also be found to be the most important factor.

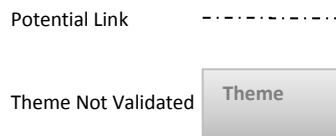
Similarly, the three themes related to experience were also found to be important factors that influence the outcome for these project cases. This chapter also provided more evidence on why experience plays an important role in the project life cycle. However, this finding is also necessarily constrained by the methodology. The case study method was chosen with the objective of generalizing to theory. Hence, the greatest limitation is also the limited types of project (four cases) that were tested so far. Even though this range of cases provides good evidence that experience is the most important factor for project implementations, more evidence, for the team familiarity factor (Theme 2), in particular, is needed before we can have the same degree of confidence for other types of project. Therefore, further research was conducted with different types of projects to validate if team familiarity, individual experience and organization experience would also be found to be important factors.

The new finding in this chapter is that it managed to capture three more themes: Theme 9: Implementation Intention, Theme 10: Leadership National Culture and Theme 11: Monitoring and Control strategy. These arising themes can also provide more answers for research questions 1 and 2. However, more evidence is still needed before we can have a good degree of confidence. Therefore, further research was conducted with different types of project as included in chapter 7 to validate if implementation intention and leadership national culture factors would also hold true. Figure 6.1 displays the finding of this chapter in a contextual framework as part of the development of the overall conceptual model. The next chapter tries to confirm, extend, and sharpen construct definitions, validity, and measurability. This is because there may be room to question some of the qualitative statements from this research, as the linkage is based on a limited number of interview statements conducted on four case studies although other qualitative data has been reviewed to support these finding.

**Figure 6.1: Cross-Case Framework.**



### Legends



## Chapter 7: Confirmatory Case Studies

### 7.1 Introduction

The confirmatory case studies phase covers which theory might fit the data. This is because a close fit between theory and data is crucial to build a sound theory. It gives the researcher the opportunity to see new insights from the data and come up with an empirically valid theory. As the building evidence exercise continues in order to build the model (**Research Objective 3**), the purpose of this chapter is to validate the theoretical model presented in chapter 6 in order to develop an updated framework based on the identification of influencing factors on project success. The logical chain of evidence that would improve the transferability of the results beyond the single case study as explained by Miles and Huberman (1994) and Yin (2009) are presented here. At the end of this chapter a comprehensive table including related evidence is provided so the theoretical framework can be further reshaped in the next chapter. The researcher assessed the consistency and strength of relationships within and across cases and has fully displayed the evidence so other researchers can apply their own standards.

This chapter discusses six more case backgrounds to the data collection process, including three low and three high performance project cases. The results are explained within-case to illustrate confirmatory case-study analysis for theoretical validation. During this chapter, the cases are illustrated and analysed in the order given in Table 7.1.



**Table 7.1: Chapter 7 Case Studies**

Case No.	Project No.	Case Description
Case Study No. 5	Project – O-10525	Design and Construction of Razeen Labour City Wastewater Treatment Plant
Case Study No. 6	Project – O-1692	Construction Work for Upgrading of Ghayathi Wastewater Treatment Plant and TSE Pumping Station and Pressure Mains
Case Study No. 7	Project - 1086B	Construction of Trunk Sewers and Associated Treated Effluent System for Al Wathba (Lot 'B')
Case Study No. 8	Project - O-1434	Al Ain Asset Enhancement Scheme - Construction of Trunk Sewer Network and TSE Infrastructure – Part 1
Case Study No. 9	Project - O-1463	Construction Works Associated With Replacement Of Existing AC Sewer Lines At Abu Dhabi Island – Category – A
Case Study No. 10	Project - O-1673	Hameem Development – Zonescorp Construction of Sewerage Network and Pumping Station

## 7.2 Case Study 5 (Project O-10525)

This case study was the design and construction of Razeen Labour City Wastewater Treatment Plant in Abu Dhabi City. It was awarded to an international contracting company (Besix) who had a joint venture with a local sponsor. The overall cost of the project was AED 50,469,212.84. The construction phase of the contract was 24 months in duration (including a 12-month warranty period). This case study was selected based on the cost and schedule index and categorised as one of the high performing projects. Data were collected using two instruments (semi-structured interviews and supporting documents). Two semi-structured interview were conducted with the consultant project manager whose contact detail was obtained from the progress meetings reports. Two more semi-structured interviews were carried out with the assigned client and contractor project managers. Their contact details were also obtained from the progress meeting reports. Table 7.2 includes general information about the project, interviews, and interviewees as well as the research method. Table 7.2 includes general information about the project, interviews, and interviewees and the research method.

**Table 7.2: Case General Information (Project O-10525)**

Project	Client	Consultant	Contractor	Project Value
Design and Construction of Razeen Labour City Wastewater Treatment Plant	ADSSC	Parson	Besix	AED 50469212.84
Project Start Date	Project End Date	Methodology	Collection Method	Instruments
5 July 2011	4 July 2012	Case Study	Supporting Document and Interviews	Semi-structured, open-ended, direct/indirect, formal supporting document
Interviewees Code	Role in Project	Interview Type	Interview Duration	Location
Client Project Manager, C4-CL-IN1	Project Manager (Client)	Semi-structured	40 min	ADSSC Headquarter
Consultant Project Manager, C4-CL-IN2	Project Manager (Consultant)	Semi-structured	10 + 5 min	ADSSC Headquarter/ Phone
Contractor Project Manager, C4-CL-IN3	Project Manager (Contractor)	Semi-structured	10 min	Phone

**7.2.1 Project Overview**

The project is for the design and construction of Razeen Labour City wastewater treatment plant in Abu Dhabi. The Scope of Works includes the following:

- Develop and ascertain approvals from the Engineer and Abu Dhabi Municipality for a geotechnical investigation to allow detailed design;
- Provide the detailed design for the foundations of the Wastewater Treatment Plant;
- Detailed design of the access roads and ancillary works;
- Liaison with the Engineer to provide information on the Employer's requirements and on the key interfaces with other relevant projects;
- Upkeep of the site;
- Ascertaining approvals and permits from the relevant authorities;
- Construction of the Wastewater Treatment Plant, including the boundary wall;
- Construction of the Wastewater Treatment Plant access road and ancillary works in accordance with these contract documents and the final approved detailed design;
- Training of a dedicated operation and maintenance team from ADSSC;

- Testing and commissioning of the works prior to the 'Taking Over' and Operation and Maintenance of the completed works until issuance of the Taking Over Certificate;
- Liaison with other contractors;

According to the official progress meeting reports, the project was awarded by ADSSC to M/s. Six Construct – Besix Sanotec JV (Besix) on 5 July 2011, in the amount of AED 50,469,212.84. The duration of the contract was 24 months (including a 12-month warranty period). The effective date was 5 July 2011. The location of the project in Abu Dhabi Emirate is approximately 70 km from Abu Dhabi and 100 m from Al Ain Truck Road – at the Labour Camp in Razeen.

At 18.63% of the contract period, there was no recorded actual progress for reasons beyond the contractor's control. There were procedures and processes the contractor had to meet before the actual construction work could start. These procedures might be time consuming and could only be initiated after the award letter, which is the start date of the project.

Due to the factors related to experience with project-related activities, experience of individuals, and experience prior to the current project, the project progress might have been influenced. For example, as documented in the progress meeting reports, with less than 9% of time elapsed and to be proactive, Besix submitted the project Health Safety and Environment (HSE) specific plan and procedures, as well as the QA/QC plan, and they appointed a project manager who was immediately approved by ADSSC, which is believed to be due to his competencies and long years of specialized experience. The HSE plan and QA/QC plan was immediately approved as it was found acceptable.

With 27.05% of the time elapsed, actual progress was only 4%; therefore, the contractor was requested to accelerate the site work. In order to be able to do that, Besix requested PIL assistance to expedite the process for a building permit with the authorities. This might be due to the factors related to building upon and learning from prior mistakes, experience with project-related activities, problem solving ability, effective routines for project improvement, risk management, and strong management to facilitate problems

Furthermore, due to the factors related to problem solving ability, experience with project-related activities, strong management to facilitate problems, and team having specialist members, the progress might have been influenced. For example, with 67.49% of the time elapsed, actual

progress was 26.4% whereas the planned progress was 41%. This was seen as a significant improvement in the project progress and reflected that most of the major activities awaiting approval had been approved. Additionally, with 71% of the time elapsed, actual progress was 33% against the scheduled progress of 45% and therefore the contractor was 12% behind schedule. To further expedite progress and close the 12% gap, Besix requested a plan change to expedite the electro-mechanical activities, as civil works are approximately 40% of the overall contract work.

With 143.72% of the time elapsed, actual progress was 91% against scheduled progress of 100% resulting in the contractor being 9% behind schedule. According to the report, the delay was justified, and an extension of time was approved. The major works were almost completed and were ready for testing and commission. The project was handed over two months after completing items recorded on the snag list. This project is considered to be among the high performing projects due to the factors related to individual Experience, organization Experience, and top management support as discussed in the next section.

### **7.2.2 Finding and discussion**

The findings of this case provided an explanation to research question 1 and 2 of the study and validated three themes leading to the project's success. The researcher discussed the research evidence comprising the influencing factor and quotes from the case study research, and the theme related to human and organizational capital category were presented as the following:

#### ***7.2.2.1 Human Capital/Study Objective 2/ Research Question 1***

The analysis of this case confirmed two human capital intangible resources theme. The individual experience (Theme 3) and organizational experience (Theme 4) were validated. The findings provided more explanation to research question 1 of the study. The researcher discussed the research evidence comprising the themes as below:

##### **D. Individual Experience - (Theme 3)**

Appendix 2 contains the case study transcript along with interviews questions used. Table 7.3 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the individual experience theme for further discussion.

**Table 7.3: Final Coding for Individual Experience**

Final coding framework	Initial coding framework	
Individual Experience	<ul style="list-style-type: none"> <li>• project team is perceived to be strong</li> <li>• successful project</li> <li>• Experience with project-related activities</li> <li>• strong technical skills is main driver</li> <li>• Build upon and learn from prior mistakes</li> <li>• mistakes in future improvement projects</li> </ul>	<ul style="list-style-type: none"> <li>• Problem solving ability perceived to be strong</li> <li>• Good team environment</li> <li>• knowledgeable member in the team</li> <li>• experience of individuals</li> <li>• more proficient individual</li> <li>• effective routines for project improvement</li> <li>• experience prior to the current project</li> <li>• proportional relation of experience and project success</li> </ul>

When the researcher was trying to confirm previously found factors related to human capital influencing project outcome, he asked the three interviewees about the influence of team experience. The interviewees' answers were:

- *The team experience was very high, which made it easier for them to make this project a successful project. (Client Project Manager, C5-CL-IN1)*
- *Team members have strong technical knowledge and they are specialized in this field. (Consultant Project Manager, C5-CL-IN2)*
- *The company was excellent, which means also that they have strong technical skills and that was the main driver for project success. (Contractor Project Manager, C5-CL-IN3)*

Based on the above, the researcher assumed that project performance was improved by choosing more knowledgeable and experienced project team members. Having enough experience might have enabled the team to possess competencies necessary to execute a project on time and to the standard required. Case informants believed that team experience was very important for the effectiveness and performance of the project, which the team might have throughout the duration of the project. This team experience in the industry might have affected team competencies, which made the project performance higher and enabled to meet the handover dates (time), as can be clearly seen from the statements made in the following progress meeting report:

- *Besix stated that they have prepared Excel sheet for monitoring the actual progress, the outcome as of today (17.0%) which is matching PIL estimate; present copy of S-Curve draft which shows 34% overall progress and undertake to resubmit the revised S-Curve after excluding the provisional items and day work soon. (Case 5- Progress Meeting No.10)*

The findings in Case 2 and Case 3 reveal the importance played by experience in the success of a project. The findings also reveal that specific experience that is related to the project is more beneficial than general individual and organizational experience. The application of the different skills set found in individual team members is especially beneficial to the success of the project. The findings also reveal the importance of accumulated individual experience to the success of progressive projects. There seems to be a direct relationship between individual growth and the success and growth of projects within the organization. The study also highlights the importance of specific elements of an individual's experience such as their problem solving methodology, ability to create process improvement plans, and their ability to implement tracking system among others. As argued in case 2 and 3, the individual improves their skills and knowledge base from the experience accrued from past projects, and is less likely to repeat the same mistakes in future projects (Argote 1999; Haas 2006). Individuals are less likely to repeat the same mistakes because over time they form valuable routines that ensure the success and improvement of future projects (Huckman and Pisano, 2006; Huckman et al. 2009; Lapre and Nembhard, 2011; Pisano et al. 2001; Reagans et al. 2005; Shafer et al. 2001). The findings in this case indicate the probability that the individuals have developed effective routines for successfully completing projects when the schedule slipped as stated by:

- *The construction progress at the current stage has been badly affected by the delay in obtaining building permits and authorities No Objections; However they are doing every possible effort to expedite the progress and cover the delay, therefore they have the preference to suspend the submission of recovery program till obtaining all the required permits and confirmations to clear uncertainty; Besix reported the gap between planned and actual progress at present is approximately 17.0%. (Case 5 - Progress Meeting No. 10)*

Therefore, based on this case finding, theme 3 was confirmed. The responses from the interviews in Table 7.4 show two additional statements coming from two different sources supporting the importance of individual experience for project success. These answers along with previous answers taken from table 6.10 of the cross-case chapter are strong enough to stand on their own and do not require further validation as they come from three different sources. However, more supporting statements in the following cases could give more confidence to distinguish this factor clearly from other team experience factors.

**Table 7.4: Statement supporting the importance of Individual Experience**

Theme 3	Supporting Statement
Individual Experience	<i>Every work was assigned to the member who is specialized and we had good number of people throughout. (Contractor Project Manager, C2-CL-IN3)</i>
	<i>DC stated that due to the lack of experience of the foreman and skilled labours, there is no significant progress. (Case 3-Progress Meeting 34)</i>
	<i>The project manager was not qualified and his team was not qualified. (Client PM, C3-CL-IN1)</i>
	<i>The team responsible for the hands on work was weak and were not good enough to work. (Consultant PM, C3-CL-IN2)</i>
	<i>This is pure technical work so the project team's technical skill [skill of all individual] should be high and it was high. (Contractor Project Manager, C2-CL-IN3)</i>
	<i>The team was so strong [all individual experience of members] to drive the project by themselves. (Consultant Project Manager, C2-CL-IN2).</i>
	<i>They [project team members] did not have previous experience in the sewerage so they lacked the technical competencies. (Consultant PM, C3-CL-IN2)</i>
	<i>As I mentioned, this was our first project and the team needed more similar project to build their competency and skill. (Contractor PM, C2-CL-IN3)</i>
	<i>The team experience was very high, which made it easier for them to make this project a successful project. (Client Project Manager, C5-CL-IN1)</i>
	<i>Team members have strong technical knowledge and they are specialized in this field. (Consultant Project Manager, C5-CL-IN2)</i>
	<i>The team experience was very high, which made it easier for them to make this project a successful project. (Client Project Manager, C5-CL-IN1)</i>

#### E. Organization Experience - (Theme 4)

Appendix 2 contains the case study transcript along with interviews questions used. Table 7.5 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the organization experience theme for further discussion.

**Table 7.5: Final Coding for Organization Experience**

Final coding framework	Initial coding framework	
Organization Experience	<ul style="list-style-type: none"> <li>• project team is perceived to be strong</li> <li>• Knowledge sharing</li> <li>• Knowledge generated by other members</li> <li>• organizational memory</li> <li>• task-related information and knowledge</li> <li>• access to prior project-related materials</li> <li>• documented learning</li> <li>• project database for experts opinion on issue</li> </ul>	<ul style="list-style-type: none"> <li>• Problem solving ability is perceived to be strong</li> <li>• Team is perceived to have specialist members</li> <li>• previous long experience</li> <li>• training is perceived to be strong</li> <li>• access to organizational experience</li> <li>• Better sense to what works and what does not</li> <li>• team receptive to improvement</li> <li>• Organizational experience grows, individuals opportunities for to benefit from knowledge accumulated from others increase</li> </ul>

The findings in case 2 and 3 indicate that the individuals in a project team might benefit from the knowledge generated by other members of the team (Anand et al. 2010); Fiol and Lyles, 1985; Lapre and Nembhard, 2011; Reagans et al. 2005). It is however important to remember that the level of knowledge sharing might be dependent on the good working relationships and connections among the team members as shown in this project case. The interviewees stated:

- *Relationship was good.* (Client Project Manager, C5-CL-IN1)
- *Good one [relationship].* (Consultant Project Manager, C5-CL-IN2)

Following the same argument presented in case 2 and 4, according to Anand et al. (2010); Fiol and Lyles (1985); Lapre and Nembhard (2011); Reagans et al. (2005), organizational experience is formed in part from the accumulated experience of the team members. When the team members



share their knowledge with the others, it can be classified as organizational experience since it is shared by a group of employees as opposed to just one employee. Some organizational experience can be found in archived project documentation. Archived project documentation can provide both 'soft' and 'hard' task-specific data useful in the successful implementation of a future project (Faraj and Sproull, 2000; Haas, 2006; Huber, 1991; Kim, 1993; Yao et al. 2012). In this case, there is an indication that the contractor had archived project documentation. The contractor had a considerable specialized and intensive work experience as stated by one of the interviewees;

- *Because of their technical knowledge they were able to solve technical issues and come up with an effective solution with regards to the SCADA integration issue. (Consultant Project Manager, C5-CL-IN2).*
- *Team members have strong technical knowledge and they are specialized in this field. (Consultant Project Manager, C5-CL-IN2)*

Similar to the argument presented in case 2 and 4, it is possible the team members had access to archived project documentation such as project planning documents, documented learning, and the detailed description of analyses conducted. For example, one of the project reports requires the team members to document any key learning opportunities they had. The key learning opportunities can be within the main project and even outside the scope of the current project. The aim is to ensure the knowledge acquired is applied in the situations the team members may encounter. In terms of the 'soft' knowledge accrued, the team members can access the project database to find expert opinions on certain issues of interest to the employees. It is possible that access to archived organizational databases allowed the employees to evaluate what had worked and what had not worked in the past projects. The individual's in the project did not have to experiment with different possible routines since there was some evidence of what had not worked in the past (Reagans et al. 2005). These findings were evident in the team's ability to solve problems as stated below:

- *Whenever we have a technical problem, we refer to our database document for different technical options. (Contractor Project Manager, C5-CL-IN3)*

In conclusion, as argued in case 2, and 3, there is evidence to indicate that the growth of an individual is beneficial to improving the individual's experiences. It is because the individual has more to gain from the accrued knowledge of others especially when the individuals are working as

part of a team. There is also an indication that organizational growth gives the organization the opportunity to identify the knowledge gaps, and to make appropriate training schedules to fill the gaps. The method is particularly successful if the project team members are receptive to the improvement process (Benner and Tushman, 2002; Reagans et al. 2005; Upton and Kim, 1998). The general expectation of the improvement process is that the knowledge accrued will yield a high number of successful projects in the future. One interviewee stated:

- *They have done many similar projects. They were able to brainstorm to solve problems quickly. Proper training and Lesson learn document from previous projects surely helping them.* (Consultant Project Manager, C5-CL-IN2)

This statement also shows that organizational experience for the assigned contractor might have been strong due to the facts that the contractor had previous long experience working on similar specialized highly technical projects. The responses from the interviews in Table 7.6 shows two statements coming from different sources supporting the importance of organization experience for project success. These answers along with previous answers taken from table 6.10 of the cross-case chapter are now strong enough to stand on their own and do not require further validation as data coming from three different sources was achieved. However, more supporting statements in the following cases could give more confidence to distinguish this factor clearly from other team experience factors.

**Table 7.6: Statement supporting the importance of Theme 4**

Theme	Supporting Statement
Organization Experience (Theme 4)	<i>The team [the contractor] was very good and had many years of experience, as the company was specialized in this type of work. (Consultant Project Manager, C2-CL-IN2)</i>
	<i>Because [low project performance] Al Jabir contracting company project in the sewerage industry is little. (Client PM, C3-CL-IN1)</i>
	<i>All of the team members were new to the sewerage industry and had little experience [including their company]. The management wanted to go into this industry so this was our first project. (Contractor PM, C3-CL-IN3)</i>
	<i>They [the contractor company] did not have previous experience of sewerage so they lacked the technical competencies. (Consultant PM, C2-CL-IN2)</i>
	<i>We [the contractor company] have been in business for long and we have dealt with all authorities as we executed many projects in the past. (Contractor Project Manager, C8-CL-IN3)</i>
	<i>Whenever we have a technical problem, we refer to our database document [of the company] for different technical options. (Contractor Project Manager, C5-CL-IN3)</i>
	<i>They have done many similar projects. They were able to brainstorm to solve problems quickly. Proper training and Lesson learn document [available at the company] from previous projects surely helping them. (Consultant Project Manager, C5-CL-IN2)</i>

#### **7.2.2.2 Organization Capital/Study Objective 2/ Research Question 2**

The analysis of this case confirmed one organizational capital intangible resources theme. The top management support (Theme 6) was validated. The findings provided more explanation to research question 2 of the study. The researcher discussed the research evidence comprising the themes as below:

##### **A. Top Management Support - (Theme 6)**

Appendix 2 contains the case study transcript along with interviews questions used.

Table 7.7 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the top management theme for further discussion.

**Table 7.7: Final Coding for Top Management Support**

Final coding framework	Initial coding framework	
Top Management Support	<ul style="list-style-type: none"> <li>• performance-enhancing initiatives</li> <li>• team efficacy/potency is perceived to be strong</li> <li>• Risk management</li> <li>• Procurement strategy</li> <li>• Strong management to devote time</li> <li>• Strong management to review plan</li> <li>• Strong management to follow up on results</li> </ul>	<ul style="list-style-type: none"> <li>• Problem solving ability is perceived to be strong</li> <li>• Team is perceived to have specialist members</li> <li>• Successful project</li> <li>• management support is perceived to be strong</li> <li>• organization capital</li> <li>• relationship capital</li> <li>• realisation of benefits focus</li> <li>• Strong management to facilitate problems</li> <li>• Management support is a critical success factor</li> </ul>

While attempting to confirm one of the organizational intangible themes influencing project success, the researcher asked the three interviewees about the managerial support factor and its influence on success of the project. The interviewees stated:

- *If their top management was not involved, this project would have not finished on time.* (Client Project Manager, C5-CL-IN1)
- *Good support from Besix management in this project.* (Consultant Project Manager, C5-CL-IN2)
- *We had many issues on this project and the management was there for us.* (Contractor Project Manager, C5-CL-IN3)

The above findings reveal that for the project to be effective, the project team should be supported to take action proactively and promptly with regards to problem solving. Throughout this case, obtaining buildings permits from authorities could have presented a great obstacle, as can be noticed in Progress Meetings No. 10 to No. 25, with strong statements, such as:

- *The construction progress at the current stage has been badly affected by the delay in obtaining building permits and authorities No Objections; however they are doing every*

*possible effort to expedite the progress and cover the delay, therefore they have the preference to suspend the submission of recovery program till obtaining all the required permits and confirmations to clear uncertainty. (Case 5 - Progress Meeting No. 10]*

The arguments in case study 4 collaborate on the definition of Top Management Support (TMS). TMS can be defined as the commitment shown by the top management, mainly the CEO and other senior managers, demonstrated in some key activities. These activities include devoting time to review plans, to follow up on results, and to facilitate management problems (Young and Jordan, 2008). The extent to which the top management is involved in TMS activities is determined by the cost and the potential of the project. In most cases, the CEO and other senior managers spend time familiarising themselves with the project, and only interfere with the project when there are major issues that can derail the success of the project. On the other hand, the project's top leaders spend more time reviewing the plans, following up with the results, and facilitating management problems. It is nevertheless important to realise that TMS activities play a critical role in determining the success or failure of a project. In this case, the involvement of the top management in resolving the issues facing the employees might have played a key role in the success of the project. The contractor's top management allocated time to interfere and resolve conflicts between the project client and the contractor's project team. The progress meeting reports also recognised some of the key risks facing the steering committee. The reports also indicate the top management's support for the project during the entire length of the project. The contractor's management team also supported the contractor in implementing the customers' requirements which needed structural and process changes. According to the definition of TMS which includes the facilitation of management problems, the example presented in this case proposes that facilitation involves conclusions to be made to diminish or agree to take business risks that are freestanding of the authority of the project team as stated below:

- *If their top management was not involved, this project would have not finished on time.* (Client Project Manager, C5-CL-IN1)
- *Good support from Besix management in this project.* (Consultant Project Manager, C5-CL-IN2)
- *We had many issues on this project and the management was there for us.* (Contractor Project Manager, C5-CL-IN3)

The findings of the case support the conclusion that TMS is an important project success factor in the completion of a project. The role played by the top management is to ensure effective decision making to manage the eminent risks of the project, and to authorise the business process change. The example also highlights that it might be important for the client to have a good working relationship with the management of the team to authorise business change, and mitigate the risks in a project. If the client lacks authority or is unable to influence the contractor, the example indicates that the top management should be willing to intervene to support the client (Young and Jordan, 2008).

Therefore, based on this case finding, theme 6 was confirmed. The responses from the interviews in Table 7.8 show three additional statements coming from three different sources supporting the importance of top management support for project success. These answers along with previous answers taken from table 6.9 of the cross-case chapter are strong enough to stand on their own and validate the theme; however, more supporting statements in the following cases could give more confidence as this theme appears to be a very critical factor.

**Table 7.8: Statement supporting the importance of Top Management Support**

Theme 6	Supporting Statement
Top Management Support	<i>But the home office [top management] was delaying the material procurement. And this is was one of the major problems. (Client PM, C1-CL-IN1)</i>
	<i>The home office [top management] support was very weak mainly because of bad management. But the management was not there. The team's experience and management were weak. The managerial support was weak. The factor that may affect the project negatively is management. (Client PM, C3-CL-IN1)</i>
	<i>Management was from the client side and contractor side was good as they supported the team throughout the project. (Consultant PM, C2-CL-IN2)</i>
	<i>If their top management was not involved, this project would have not finished on time. (Client Project Manager, C5-CL-IN1)</i>
	<i>Good support from Besix management in this project. (Consultant Project Manager, C5-CL-IN2)</i>
	<i>We had many issues on this project and the management was there for us. (Contractor Project Manager, C5-CL-IN3)</i>

### **7.2.3 Summary of Findings for the Case**

The analysis of this case confirmed the individual experience (Theme 3), organizational experience (Theme 4), and top management support (Theme 6). The responses from the interviews show two additional statements coming from two different sources supporting the importance of individual experience for project success. These answers along with previous answers taken from the cross-case chapter are strong enough to stand on their own and do not require further validation as they come from three different sources. However, more supporting statements in the following cases could give more confidence to distinguish this factor clearly from other team experience factors. Similarly, the responses from the interviews show two statements coming from different sources supporting the importance of organization experience for project success. These answers along with previous answers taken from the cross-case chapter are now strong enough to stand on their own and do not require further validation as data coming from three different sources was achieved. However, more supporting statements in the following cases could give more confidence to distinguish this factor clearly from other team experience factors.

The responses from the interviews show three additional statements coming from three different sources supporting the importance of top management support for project success. These answers along with previous answers taken from the cross-case chapter are strong enough to stand on their own and validate the theme; however, more supporting statements in the following cases could give more confidence due to the criticality shown for this factor.

As for the other themes not discussed in this case study, they need to be observed carefully in the following cases and should be focused on. Due to the limitation of the second set of semi-structured interview questions (discussed in chapters 3 and 9); the researcher was not able to confirm more themes. These questions were designed initially to confirm previous themes emerging in chapters 5 and 6. The next section is the analysis of case study 6, which is a project for the construction work for upgrading of Ghayathi Wastewater Treatment Plant and TSE Pumping Station and Pressure Mains.

### **7.3 Case Study 6 (Project O-1692)**

This case study was a construction work for upgrading of Ghayathi Wastewater Treatment Plant and TSE Pumping Station and Pressure Mains. The project was awarded to a local contractor (Al Nasr Contracting Company L.L.C.V.). The overall cost of the project was AED 78,500,148.00. The

construction phase of the contract was 24 months in duration. This case study was selected based on the cost and schedule index and categorised as one of the low performing projects. Data were collected using two instruments (semi-structured interviews and supporting documents). Two semi-structured interview were conducted with the consultant project manager whose contact detail was obtained from the progress meetings reports. Two more semi-structured interviews were carried out with the assigned client and contractor project managers. Their contact details were also obtained from the progress meeting reports. Table 7.9 below includes general information about the project, interviews, and interviewees as well as the research method

**Table 7.9: Case General Information (Project O-1692)**

Project	Client	Consultant	Contractor	Project Value
Construction Work for Upgrading of Ghayathi Wastewater Treatment Plant and TSE Pumping Station and Pressure Mains	ADSSC	ACE International – Consulting Engineers	Al Nasr Contracting Company L.L.C.V.	78,500,148.00 AED
Project Start Date	Project End Date	Methodology	Collection Method	Instruments
28 January 2010	28 April 2012	Case Study	Supporting Document and Interviews	Semi-structured, open-ended, direct/indirect, formal supporting document
Interviewees	Role in Project	Interview Type	Interview Duration	Location
Client Project Manager, C5-CL-IN1	Project Manager (Client)	Semi-structured	40 min	ADSSC Headquarter
Consultant Project Manager, C5-CL-IN2	Project Manager (Consultant)	Semi-structured	10 + 5 min	Phone
Contractor Project Manager, C5-CL-IN3	Project Manager (Contractor)	Semi-structured	18 min	Phone

### 7.3.1 Project Overview

In order to increase the capacity of the plant at Ghayathi to prevent overloading, this project was considered. The required increase in capacity to meet expected growth in the area is 5,000 m<sup>3</sup>/d for a total of 7500 m<sup>3</sup>/d. The expansion facilities consisted of a separate train of facilities (primary, secondary, tertiary, and sludge treatment). Wastewater could be treated for reuse as irrigation water in accordance with TSE Standards set by ADSSC Design Guidelines for Sewage Treatment



Plant Design. In addition to expansion works at the STP site, the project included the construction of approximately 8,800 m of 280 mm diameter pressure mains with appurtenance and dedicated pumping station. This project covered the following scope of work:

- Flow distribution between existing and proposed facilities.
- Additional flows to the Plant to be transmitted through a new pressure line.
- Inlet works: The new facilities were provided with screen, grit separator, and oil separator. The screens are mechanical with 10mm spacing and automatic removal of screenings.
- Aeration tanks: Four aeration tanks are proposed, which will allow operation when one is out of service for maintenance. For the new expansion, it is proposed to use diffused fine bubble instead of surface aerators.
- Clarifiers: Two clarifiers were provided, each having a diameter of 20m and 4m side water depth.
- Filters: Two sets, additional to the existing 6 filters, were required for the new facility to treat 5000 m<sup>3</sup>/d.
- Chlorination: The existing chlorination facility included 2 chlorinators (1 duty + 1 standby) each of capacity 10 kg/Hr, for pre-filter and post filter chlorination.
- Chlorine contact tank: An additional contact tank was provided as part of the expansion facilities designed for a minimum of 15 minutes detention time at peak flow (40 minutes at average flow).
- Effluent storage: An additional storage capacity of 2280 m<sup>3</sup> was provided to cater for future flows with one of the existing storage tanks out of operation for maintenance. The proposed new effluent storage tank consists of 2 compartments with a capacity of 1140 m<sup>3</sup> each. The new tanks were interconnected with the existing storage tanks such that the combined total water stored is delivered through the existing effluent pumping station.
- Effluent pumping station: To replace the existing 2 pumps pumping TSE to Ghayathi with 2 new pumps of capacity 7000 m<sup>3</sup>/d (81 L/s) at a head of 7 bars (75 KW).
- Sludge recycle/sludge wasting pumping station: Sludge recycle pumps to pump up to 1.30 times the average daily flow i.e. 6500m<sup>3</sup>/d (75.23 L/s).

- Thickened sludge pumping station: Two pumps installed in a shed were provided, each pump having a capacity, 37vm<sup>3</sup>/Hr at a head of 3 bars (10 KW).
- Sludge drying beds: A total of 10 beds equal to the existing ones were provided in the expansion works.
- Odour control: Odour control facility using activated carbon filters were provided to treat odours from the Inlet Works and the Sludge Thickener.

According to the official progress meeting reports, within the first three months of the project, the contractor was not able to make any progress on site, due to the pending approval of the municipality for the allocation of a plot for the establishment of a labourers' campsite. This delay in progress could be related to the factors of overcoming difficulties, connection between contracting parties, coordination between parties, problem solving ability, weak management to facilitate problems, planning ability, not fully aware of the regulations, and no innovative solutions for issues and problems.

Due to the factors related to the problem solving ability, overcoming the difficulties, client dissatisfaction, and monitoring and control, the project progress might have been influenced. For example, with time elapsed by 117 days, planned progress was 4%, whereas the actual progress was only 1.2%. To speed up the work and compensate for the delay, ADSSC/ACE requested the contractor make early arrangements for the permanent power connection to ensure that commissioning was not delayed.

After 204 days, planned progress was 17.15%, whereas the actual progress was only 7.46%. Besides the initial delay, caused by obtaining the permit from the municipality, other factors might have contributed for slow progress. For example, the contractor was behind in the Base Program, delayed on submittals of materials, method statement, and shop drawings, and was responsible for the delay in obtaining ADDC permanent power connection. This could be related to planning intention, implementation mind-set, problem solving ability, and team efficacy/potency.

Due to the factors related to resource planning, the progress might have been influenced. For example, after 420 days, planned progress was 84.22% whereas the actual progress was only

23.5%. The main reason contributing to the slow progress could be due to lack of staff and labours for area E and M to cover the delay in this stage.

With time having elapsed by 482 days, planned progress was 100% whereas the actual progress was only 32.50%. This low performance of work might be due to the lack of staff and labours for E and M, delays in submittals, materials, method statement, and shop drawings, as no permission to start the work could have been given before the method statement was approved.

With 566 days of the contract period having passed, the revised planned progress was 37.8% whereas the actual progress was only 34.15%. The newly expected completion date was set to 31 January 2012. In order to ensure completion of the project at said forecasted date, ADSSC/ACE officially requested that the contractor improve the staff and labours for E and M and to increase the labour to accord with materials present on site and the completion program. This could be related to resource planning, weak management to review plan, weak management to follow up on results, and monitoring and control.

After 691 days, the revised planned progress was 76.25% whereas the actual progress was only 40.71%. According to the minutes of progress meeting report, this slow progress was again due to the lack of staff and labours for area E and M, as well as overdue submittals, materials, method statement and shop drawings.

With the passage of 803 days, the revised planned progress was 100% whereas the actual progress was only 65%. According to the official progress meeting report, this slow progress was due to the suspension of work on site caused by a warning letter, and work could only be restarted after getting the approval of WRM after the results of tests. Therefore, the contractor requested a new finish date for the project, 28 September 2012, which was also justified, and might be due to the anticipated delay in completing the permanent electrical connection to site. This delay could be related to the factors of connection between contracting parties, monitoring and control, client dissatisfaction, and relationship with contracting parties.

Due to the factors related to the identification of the problem, decision and action plan, overcoming the difficulties, the progress might have been influenced. For example, with a time

elapse of 1055 days, the revised planned progress was 100% whereas the actual progress was only 87.5%. The new forecasted date was 8 March 2013. An official request was made by ADSSC/ACE for the contractor to improve the labour level to cover the snag lists and to avoid any more delay. Points of concern were highlighted as the following:

- ANC requested ACE for civil defence drawing of the basic design from the Civil Defence Department.
- Permanent connection of electricity. ANC stated that they are at stage 5.
- ACE stated that they submitted the pump efficiency report to ADSSC and they were awaiting final approval from ADSSC.
- ANC/ACE was advised by ADSSC to rectify the comments on the snag lists jointly with ADSSC Operation and Maintenance Department.

### **7.3.2 Finding and discussion**

The findings of this case provided explanations for three of the research questions of the study and confirmed four themes leading to the project's success. The researcher discussed the research evidence comprising the influencing factor and quotes from the case study research, and the theme related to three categories were presented as the following.

#### ***7.3.2.1 Human Capital/Study Objective 2/ Research Question 1***

The analysis of this case confirmed two human capital intangible resources theme. The leadership industry-specific experience (Theme 1) and the implementation intention (Theme 9) were validated. The findings provided more explanation to research question 1 of the study. The researcher discussed the research evidence comprising the themes as below:

##### **B. Leadership Industry-Specific Experience - (*Theme 1*)**

Appendix 2 contains the case study transcript along with interviews questions used. Table 7.10 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present themes for further discussion.

**Table 7.10: Final Coding for Leadership Industry-Specific Experience**

Final coding framework		Initial coding framework
Leadership Industry-Specific Experience	<ul style="list-style-type: none"> <li>• PM is perceived to have weak Industry specific and local experience</li> <li>• PM is perceived to negatively affect outcome</li> <li>• PM is perceived to disturb the work duration</li> <li>• not fully aware of the regulations</li> <li>• No technical Excellence in nurture/in force technical practice</li> <li>• No technical Excellence in monitor technical excellence</li> <li>• No technical Excellence in organization of accumulated technical experience</li> </ul>	<ul style="list-style-type: none"> <li>• No Innovative solutions for issues and problems</li> <li>• Client not satisfied</li> <li>• No technical Excellence in organization of information communicated to/from customers</li> <li>• No Team Support via facilitation</li> <li>• Not assigning the right manager</li> <li>• no innovation in organization of acquired knowledge</li> <li>• Industry Specific Experience is valuable</li> </ul>

The researcher searched for an explanation to research question 1 by confirming theme 1 found in previous phase; he asked the two interviewees how the assigned project manager influenced the overall outcome of the project. The answer provided was:

- *The project manager was not fully aware of the regulations here. He is weak technically*  
(Client Project Manager, C6-CL-IN1)

When the researcher asked for an explanation of how this affected the project, the two interviewees answered:

- *Not following the regulations. The project manager was supposed to be aware of them to avoid such thing. The project manager was not aware of all of its technical sides*  
(Consultant's Project Manager, C6-CL-IN2)
- *As I said, regulations by WRM were not so clear to make clear standards to follow.*  
(Contractor's Project Manager, C6-CL-IN3)

It appears that this project case provided more evidence showing that due to the weak industry-specific experience, project performance was low in meeting project time. The researcher

observed that this case study's interviewees repeatedly referred to ideas associated with not being aware of the regulations, and the contractor's weak team experience. The success of a project is also dependent on the level of the contractor's technical expertise. The case indicates there is a strong relationship between the outcome of the project and the individuals' level of industry-specific experience. The findings especially emphasize the project team leader's individual (Theme 3) experience as an important factor in the outcome of the project. The same findings can be applied to section 6.2.1 to highlight the importance of the project team leader's role in the organization's ability to attain its mission and goals. The project team leader seems to provide a sense of stability in a changing structural and process environment to accommodate the requirements of the client. The project team leader provides stability through positive values, highest levels of ethics, morality, lead from the heart, personal capabilities, out-of-the-box thinking, and interpersonal skills" (Pandya, 2014, p. 40), but also thorough technical knowledge. The project team leader should also be innovative. According to Walker (2011), modern day project team leaders should adapt the innovative style of leadership as a necessity to remain effective as a leader. Innovative management means project team leader can deliver success in time, on budget, and in the highest quality possible quality. The project team leader should also position the organization in a way that enables the employees to share and recall knowledge, and ensure its sustainability in the future. An effective leader not only needs to be innovative but also operative. An operative project team leader has to apply technical skills, and the capability to apply the behavioral competencies defined by Muller (2012). The skill set demonstrated by the innovative and operative project team leader is used to select future project team leaders. The selected project team leader can guarantee project success and the sustainability of the organization. On the other hand, technical and industry-specific experience such as technical regulation can significantly contribute to transactional and transformation leadership skills that are necessary for dealing with different situations throughout the project cycle successfully. Technical expertise also means a project team leader demonstrates key competencies in other leadership issues such as team building, openness, self-confidence, organization, and clearly defining project successes, reevaluating and making adjustment to the situation when necessary (Kaminsky 2012). The extra competencies and abilities ideally should increase the stakeholder's confidence in the successful completion of the project. The findings in this case seem to indicate the stakeholder's, mainly the project consultants and the clients, did not feel the positive impact of a successful project as stated below:

- *They were not very much supportive. They could not help in assigning the right manager, the right experienced team, and good internal control.* (Consultant's Project Manager, C6-CL-IN2)

It is possible for the project to be efficient and effective in achieving the predetermined objectives in a shorter time. The positive outcome of the project is valuable not only to the investors but to the other stakeholders involved in the project. The other stakeholders can include the organization, the project manager, executive staff, team members, and outsourced facilities (Kaminsky, 2012).

If a project manager has competency and knowledge gaps especially in technical capabilities, it might hinder the success of the project and the organization as a whole (Toor et al. 2006). The project team leader might have difficulties in technical issues such as terminologies, current technologies, prevailing regulations, and how to respond to the emerging issues within the project. The project team leader might constantly face challenges in decision making and mitigating the risks associated with the projects since they are not familiar with the problems of the project, and can therefore not formulate the appropriate responses (Whitten, 2000) as stated in this case study:

- *As I said, regulations by WRM were not so clear to make clear standard to follow.* (Contractor Project Manager, C6-CL-IN3)

Therefore, results of the case study also depart from the concept that project leaders are required to have an understanding of technology and having in-depth technical skills and knowledge is not essential since the presence of team members can be an effective technique for compensating and supplying the required expertise. This confirms theme 1 found in the previous phase. The responses from the interviews in Table 7.11 show an additional two almost certain statements coming from two sources supporting the importance of leadership technical skill for project success. These answers along with the answer taken from table 6.2 are now strong enough as they are coming from three different sources to stand on their own.

**Table 7.11: Statement supporting the importance of Leadership Industry-Specific Skill**

Theme 1	Supporting Statement
Leadership industry-specific skill	<i>The team leader's knowledge in ADDC [technical] specifications of DBs, transformers and electrical cables was very limited. If he was aware of these specifications, he could have acted at the early stage of the project and either suggested alternative proposal or requested materials specification changes. (Client PM, C1-CL-IN1)</i>
	<i>He was technically weak and also his feedback. (Client Project Manager, C1-CL-IN1)</i>
	<i>Not following the regulations. The project manager was supposed to be aware of them to avoid such thing. The project manager was not aware of all of its technical sides (Consultant's Project Manager, C6-CL-IN2)</i>
	<i>The project manager was not fully aware of the regulations here. He is weak technically (Client Project Manager, C6-CL-IN1)</i>

### C. Implementation Intention (Theme 9)

Appendix 2 contains the case study transcript along with interviews questions used. Table 7.12 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the implementation intention theme for further discussion.

**Table 7.12: Final Coding for Implementation Intention**

Final coding framework	Initial coding framework	
Implementation Intention	<ul style="list-style-type: none"> <li>• Unsuccessful project</li> <li>• resource planning is perceived to be weak is perceived to be weak</li> <li>• Planning ability is perceived to be weak</li> <li>• planning intention</li> <li>• implementation mind-set</li> <li>• management support is perceived to be weak</li> </ul>	<ul style="list-style-type: none"> <li>• communication is perceived to be weak</li> <li>• innovation and creative solutions are perceived to be weak</li> <li>• industry specific experience is perceived to be weak</li> <li>• implementation of innovative ideas is perceived to be weak</li> <li>• Problem solving ability is perceived to be weak</li> </ul>



While attempting to confirm one of the human intangible factors influencing project success, the researcher asked the three interviewees about the planning ability factor and its influence on success of the project. The interviewees stated:

- *It is basically lack of good planning and experience. They were too late to provide these submittals which contributed to project delay.* (Client Project Manager, C6-CL-IN1)
- *It is just bad planning. They could not estimate the risk and delay this could cause.* (Consultant Project Manager, C6-CL-IN2)
- *We were lacking experienced staff to complete these two parts.* (Contractor Project Manager, C6-CL-IN3)

The above statements show linking points and useful explanations to answer research question 1 and confirm theme 9. These linking points are between the problem solving and planning. This link directed to the topic of “implementation intention” that emerged in the previous cross-case chapter. This case delivered additional data presenting that because of the weak planning by the given contractor, the problem with lack of resources, providing the required submittals, and estimating the risk, the team was completely overwhelmed and the project was not accomplished as stated below:

- *The project was full of problems and you can see that they were not able to solve them quickly* (Client Project Manager, C6-CL-IN1)
- *The problem solving was a big issue.* (Consultant Project Manager, C6-CL-IN2)

Evidence also shows indication of bad communication planning as stated below:

- *Communication was another issue in this project and wasted unnecessary time.* (Client Project Manager, C6-CL-IN1)

Evidence also shows that due to the perceived weak industry-specific experience, proper planning for recruiting and assigning an experienced team was not achieved:

- *We were lacking experienced staff to complete these two parts.* (Contractor Project Manager, C6-CL-IN2)

One of the key activities in project planning is resource planning. It is important to anticipate the resources that will be needed in the length of the project to ensure that the project does not delay due to the lack of key resources. Most experts argue it is especially important to anticipate

manpower needs in a project, and to hire the right people to ensure the success of the project. While the theory suggest that resource planning might be a key contributor to the successful implementation of a project, it is important to consider the results in section 6.2.4 in the cross-case chapter. The results suggest implementation intentions can influence plan development (Gollwitzer and Schaal, 1998; Osburn and Mumford, 2006), when the attention is focused towards the practical issues of how, when, and where a plan has to be implemented so as to attain the predetermined goal, rather than focusing on analysing the plan's feasibility. In this case, evidence shows that implementation intention is weak as stated below:

- *It is basically lack of good planning and experience. They were too late to provide these submittals which contributed to project delay.* (Client Project Manager, C6-CL-IN1)

In any given project, the outcomes are mostly defined by the predetermined purposes, and not by the plan or the problems encountered within the project (Koole and Spijker, 2000). The challenge to find an answer to research question 1 on how human capital intangible resources impact project success, the project development, problem solving, originality, and implementation intentions relationship and their outcome on project success were reviewed during cross-case phase to confirm Caughron and Mumford's (2008) finding, and confirm theme 9 supporting that participants with implementation intentions will produce more creative results than team members without implementation intentions. The case findings affirm theme 9. According to the responses from the interviews in Table 7.13, there are statements from three different sources that indicate the importance of implementation intentions in the success of a project. The responses in Table 7.13 and data from Table 6.5 of the cross-case chapter are contrasting and cannot be validated on their own merit. The validity of the information requires more explicit statements coming from three different sources in the following cases.

**Table 7.13: Statements supporting the importance of Implementation Intention**

Theme 9	Supporting Statement
Implementation intention	<i>ADSSC/DC displayed their concern that no action [and intention] has been taken yet with regards to the solution promised by the contractor to solve the sudden reduction of manpower issue.</i> (Case 3-Progress Meeting 28)
	<i>It is basically lack of good planning and experience. They were too late [no intention] to provide these submittals which contributed to project delay.</i> (Client Project Manager, C6-CL-IN1)

### 7.3.2.2 Organization Capital/Study Objective 2/ Research Question 2

The analysis of this case revealed confirmation on one theme which is the top management support (Theme 6). The findings provide additional statements to provide an explanation to research question 2 of the study. The researcher discussed the research evidence comprising the theme as below:

#### A. Top Management Support - (Theme 6)

Appendix 2 contains the case study transcript along with interviews questions used. Table 7.14 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the top management theme for further discussion.

**Table 7.14: Final Coding for Top Management Support**

Final coding framework	Initial coding framework	
Top Management Support	<ul style="list-style-type: none"><li>• No performance-enhancing initiatives</li><li>• team efficacy/potency is perceived to be weak</li><li>• Risk management</li><li>• Procurement strategy</li><li>• Weak management to devote time</li><li>• Weak management to review plan</li><li>• Weak management to follow up on results</li><li>• Management support is a critical success factor</li></ul>	<ul style="list-style-type: none"><li>• Problem solving ability is perceived to be weak</li><li>• Team is perceived not to have specialist members</li><li>• Unsuccessful project</li><li>• management support is perceived to be weak</li><li>• organization capital</li><li>• relationship capital</li><li>• realisation of benefits focus</li><li>• Weak management to facilitate problems</li></ul>

While attempting to confirm one of the organizational intangible themes influencing project success, the researcher asked the three interviewees about the managerial support factor and its influence on success of the project. The interviewees stated:

- *They always had shortage of man power and the management was not interested in supporting.* (Client Project Manager, C6-CL-IN1)

- *They were not very much supportive. They could not help in assigning the right manager, the right experienced team, and good internal control. (Contractor Project Manager, C6-CL-IN3)*
- *We requested the management to increase manpower but due to other commitment, they were not able to. (Contractor Project Manager, C6-CL-IN3)*

The above findings reveal that for the project to be effective, the project team should be supported to take action proactively and promptly with regards to problem solving. Throughout this case, the lack of resources could have presented a great obstacle, as can be noticed in Progress Meetings No. 22 to No. 35, with strong statements, such as:

- *ANC advised by ACE to improve the staff and labours for E and M to cover the delay in this stage. ANC advised by ACE and ADSSC to deduct the amount of QA/QC Engineer in next Bill of Quantity. (Case 6 - Progress Meeting No.22)*

According to the argument presented in Case study 4, TMS (Total Management Support) is defined as the proactive dedication shown by management to the successful implementation of a project. The CEO and other senior managers show dedication to the project by devoting ample time to review the project plan, follow up on the intermediary results, and facilitate emerging management problems (Young and Jordan, 2008). The top management should offer oversight and only intervene when there are critical issues within the project. The daily operations and the tactical aspects of the project should be handled by the project's management team headed by the project team leader. The role played by the top management seems to be important in determining the success of a project. The stakeholders involved in a project should consider the involvement of the top management since it can determine the success or failure of a project. In this case, the project might have not performed optimally since there was no management interest in resolving the manpower issues within the project. The contractor's top management team did not allocate time to resolve the conflict between the client and the contractor's project team. According to the progress meeting reports, there were several risk factors that were not taken into consideration by the steering committee. It is unclear why the steering committee did not resolve the issues within the project but allowed the uncertainties to persist for the duration of the project. The management team did not mitigate the risks within the project and had to compensate the clients based on the predetermined arrangement. In this particular case, the

client did not have the ability and authority to influence the contractor to perform the tasks within the project based on the recommendations. The contractor's top management also did not intervene to resolve the conflict and as a result the required structural and procedural changes that were required for the project were not made. Based on the definition of TMS, the top management team did not facilitate the emerging management issues, and did not make any decisions to mitigate the business risks facing the project. The project team should have agreed to mitigate or take on the risks within the project as stated below:

- *We requested the management to increase manpower but due to other commitment, they were not able to* (Contractor Project Manager, C6-CL-IN3)

The findings in this particular case indicate there might be a direct relationship between the level to which top management is involved with the project, and the success of the implemented project. The findings also indicate that it is the top management's inherent responsibility to make decisions on behalf of the project team. The top management should make decisions on which and how to mitigate business risks, as well as authorise structural and procedural changes within the business and the project. The top management should also be willing to intervene on behalf of the client especially when the client lacks the authority and the ability to influence the contractor. The top management should also ensure the contractor meets the client's requirements and resolve any management issues between the client, the contractor, and the project team (Young and Jordan, 2008).

Therefore, based on this case finding, theme 6 was confirmed. The responses from the interviews in Table 7.15 shows three additional statements coming from three different sources supporting the importance of top management support for project success. These answers along with previous answers taken from table 6.9 of the cross-case chapter are strong enough to stand on their own; however, further validation and confirmation in the following cases could give more confidence.

**Table 7.15: Statement supporting the importance of Top Management Support**

Theme 6	Supporting Statement
Top Management Support	<i>But the home office [top management] was delaying the material procurement. And this is was one of the major problems. (Client PM, C1-CL-IN1)</i>
	<i>The home office [top management] support was very weak mainly because of bad management. But the management was not there. The team's experience and management were weak. The managerial support was weak. The factor that may affect the project negatively is management. (Client PM, C3-CL-IN1)</i>
	<i>Management was from the client side and contractor side was good as they supported the team throughout the project. (Consultant PM, C2-CL-IN2)</i>
	<i>If their top management was not involved, this project would have not finished on time. (Client Project Manager, C5-CL-IN1)</i>
	<i>Good support from Besix management in this project. (Consultant Project Manager, C5-CL-IN2)</i>
	<i>We had many issues on this project and the management was there for us. (Contractor Project Manager, C5-CL-IN3)</i>
	<i>They always had shortage of man power and the management was not interested in supporting. (Client PM, C6-CL-IN1)</i>
	<i>They were not very much supportive. They could not help in assigning the right manager, the right experienced team, and good internal control. (Consultant PM, C6-CL-IN2)</i>
	<i>We requested the management to increase manpower but due to other commitment, they were not able to. (Consultant PM, C6-CL-IN2)</i>

### **7.3.2.3 Relational Capital/Study Objective 2/ Research Question 3**

The analysis of this case also revealed confirmation on one theme which is the joint problem solving (Theme 8). The findings provide additional statements to provide an explanation for research question 3 of the study. The researcher discussed the research evidence comprising the theme as below:

#### **B. Joint Problem Solving - (Theme 8)**

Appendix 2 contains the case study transcript along with interviews questions used. Table 7.16 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the joint problem solving theme for further discussion.

**Table 7.16: Final Coding for Joint Problem Solving**

Final coding framework	Initial coding framework	
Joint Problem Solving	<ul style="list-style-type: none"> <li>• Knowledge sharing</li> <li>• Perception of the situation</li> <li>• Identification of the problem</li> <li>• Preference ranking</li> <li>• Exploration for alternative solution</li> <li>• Remorse and realization of contingencies</li> <li>• Situation</li> <li>• Implement</li> <li>• Readiness</li> <li>• Inter-organizational trust</li> <li>• decision and action plan</li> <li>• overcoming the difficulties</li> <li>• reach a solution</li> </ul>	<ul style="list-style-type: none"> <li>• Communication is perceived to be weak</li> <li>• Unsuccessful project</li> <li>• Client dissatisfaction</li> <li>• Monitoring and control</li> <li>• human capital</li> <li>• Connection between contracting parties is perceived to be weak</li> <li>• organization capital</li> <li>• Coordination between parties is perceived to be weak</li> <li>• relationship capital</li> <li>• relationship with contracting parties is perceived to be weak</li> <li>• Social capital</li> <li>• trying solutions</li> </ul>

The researcher tried to find an explanation to research question 3 on how the relationship resource influences project success, and based on the statement made in the progress meeting reports, the researcher asked the three interviewees how the relationship with Abu Dhabi Municipality influenced the overall outcome of the project, as an issue was noted in any of the progress meeting with regards to delay in obtaining permits or approval:

- *Al Nasr indicated that no progress was made on pending approval of the Municipality of the allocation of a plot for the establishment of labourer's campsite. (Case 5 - Progress Meeting No.2)*

Interviewees stated:

- *The relationship was not so good. There were always delays which heavily affected the project. (Client Project Manager, C6-CL-IN1)*
- *It seemed that they had issues with all entities when getting approval. (Consultant PM, C6-CL-IN2)*

- *We were not getting support from these authorities and made things too complicated for us.* (Contractor Project Manager, C6-CL-IN3)

According to the argument presented in section 5.5.2.2 of Case Study 3, it seems the statements were not considered by the researcher in making a conclusion about the relationship between the two factors. The first factor, the process of obtaining approvals from the municipality seems to be a straight forward exercise. There is a standard process of applying for the approvals, and once the requirements have been followed and submitted over the counter, the approvals should be granted. The second factor indicated that there was a poor working relationship, cooperation, and impression among the contracting parties (client, consultant, and the contracting representatives). The poor working relationship was evident throughout the interviews. It is possible that the poor working relationship among the contracting parties might have hindered the performance of the project. It is because there was no informal structure that could have offered oversight, and allowed the contracting parties to synchronize their plans and activities during the project (Jones et al., 1997; Ebbers and Wijnberg, 2009). The lack of a good working relationship also means that the contracting parties could not create contingencies to deal appropriately and effectively with the emerging issues within the project way (Uzzi 1997). One interviewee stated:

- *The problem solving was a big issue.* (Consultant Project Manager, C6-CL-IN2)

The weak relationship among the parties means the transactions might have not been fixed in the contracting parties networks (Granovetter 1985). According to Uzzi (1997) the better the quality of relationship among contracting parties, the better the effect on the time performance of the project. In this case, the poor relationships between contracting parties might explain the lower satisfaction as stated below:

- *They were not very much supportive. They could not help in assigning the right manager, the right experienced team, and good internal control.* (Consultant Project Manager, C6-CL-IN2)

A good working relationship is important in establishing trust which supports mutual respect and commitment towards the project (Uzzi 1996). A good working relationship also creates an environment which can foster knowledge sharing which enhances organizational experience (Chinowsky et al., 2008). A mutually beneficial working relationship also forms the basis for



contract management in an informal structure (Ebbers and Wijnberg, 2009), and reduces the need for official controls and oversight (Dekker and Abbeele, 2011). One interviewee stated:

- *Not following the regulations. The project manager was supposed to be aware of them to avoid such thing* (Consultant Project Manager, C6-CL-IN2)

The findings indicate there is a close relationship between the contractor's ability to understand the regulations, and the project time and the client's level of satisfaction. In this case, the contractor's understanding of the regulations might have improved the project time, and increase the customer's level of satisfaction with the project. The results also indicate the importance of developing a cordial and positive working relationship between the contracting parties of a project. One of the most important elements in developing a good working relationship is the parties' ability to understand their objectives and obligations within the project. The contracting parties also need to learn how to communicate their role and obligations within the project. The contracting parties should also be able to communicate their challenges and concerns based on their understanding of the roles and responsibilities.

- *We were not getting support from these authorities and made things too complicated for us.* (Contractor Project Manager, C6-CL-IN3)

Devising progressions such as timely progress meetings in place that will result in operational problem solving and fewer conflicts supports the developments of better relationships. There was weakness in this part of the project as stated below:

- *It was clear that the internal control by the contractor was weak causing a delay in shop drawing.* (Client Project Manager, C6-CL-IN1)
- *No good project internal control.* (Consultant PM, C6-CL-IN2)

The findings of the case also indicate the importance of developing and keeping open lines of communication (Chen and Chen, 2007). The open lines of communication means it is easy to identify problems and resolve conflict during the duration of the project (Chan et al. 2004). Open communication is also important in mitigating risks and conflicts by ensuring a dispute does not develop into a conflict (Wong and Cheung, 2005). It is because open communication provides the avenue for employees to discuss emerging disputes and avoid unnecessary misunderstandings, and costly reworks and delays (Love et al. 2010). Open communications allows the contracting

parties to develop a suitable solutions to the problems jointly (Chen and Chen, 2007), since they can discuss the differences and the options efficiently and studiously (Wong and Cheung, 2005). In this case, there is an indication that there were issues in the communication as stated by one interviewee:

- *We had some conflict due to communication.* (Contractor Project Manager, C6-CL-IN3)

The discussion on the importance of building a good working relationship and developing open lines of communication has not necessarily provided insight into how to develop relationships within the network. The findings suggest the development of a good working relationship might be pegged on timely sharing of project information (Macneil 1986b). There is evidence to suggest that the establishment of precise and impartial information might have escalated the level of trust among the contracting parties. Information sharing would have also ensured the parties have updated and relevant information which is important in the decision making process. The contracting parties could have also been in a better position to anticipate the emerging problems from the inception of the project. Information sharing, problem identification, and classification are important at the inception of the stage in strengthening the relationships among the contracting parties. The findings of the case confirm theme 9, while the interviews in Table 7.17 indicate it is important to solve projects jointly to ensure the success of the project. The findings in addition to the responses in Table 6.10 of the cross-case chapter show that collective problem solving can lead to the success or failure of a project. It is however important to realize the findings are not sufficient and require further validation and confirmation in the following cases.

**Table 7.17: Statement supporting the importance of Joint Problem Solving**

Theme 8	Supporting Statement
Joint problem solving	<i>We kept an eye especially on this [a problem] as they were many of them. That is due to the controlled [solving] plan we set. (Consultant Project Manager, C4-CL-IN2)</i>
	<i>We [contracting parties] understand the importance of the control so we decided to do weekly monitor to overcome any issue quickly. (Contractor Project Manager, C4-CL-IN3)</i>
	<i>To avoid facing problem with this, we [contracting parties] use to highlight the importance of this in almost all of our meetings so we were able to control and monitor it. (Client Project Manager, C4-CL-IN1)</i>
	<i>We [contracting parties] dedicated a member only looking after this [monitoring and control]. Team was always in good relation and we managed to improve the average progress as we put more focus and works started to open. (Contractor Project Manager, C4-CL-IN3)</i>
	<i>We were not getting support from these authorities and made things too complicated for us. (Contractor Project Manager, C6-CL-IN3)</i>

### 7.3.3 Summary of Findings for the Case

The analysis of this case confirmed leadership industry-specific skill (Theme 1), implementation intention (theme 9), top management support (Theme 6), and joint problem solving (Theme 8). The responses for Theme 1 from the interviews gave two almost certain statements coming from two sources supporting the importance of leadership technical skill for project success. These answers along with the answer taken from the cross-case chapter 6 are now strong enough as they are coming from three different sources and stand on their own. Similarly, the responses from the interviews show three additional statements coming from three different sources supporting the importance of top management support (Theme 6) for project success. These answers along with previous answers taken from the cross-case chapter are strong enough to stand on their own and further answers in the following cases could give even more confidence.

The responses from the interviews also show an additional statement coming from three different sources supporting the implementation intention theme 9 for project success. This answer along with previous data taken from the cross-case chapter is still ambiguous and not certain enough to stand on their own and therefore require more unambiguous statements in the following cases. Similarly, the responses from the interviews show one additional statement supporting the

importance of joint problem solving (Theme 7) for project success. These answers along with previous answers taken from the cross-case chapter show that collective problem solving does affect project success but these answers are not strong enough to stand on their own and therefore require further validation and confirmation in the following cases.

As for the other themes not discussed in this case study, they need to be observed carefully in the following cases and should be focused on. However, this case study provided some statements related to control and monitoring strategy (Theme 10) and motivation misalignment (Theme 5). They were not presented and discussed in this case finding due to the fact that some progress meeting reports were missing and therefore comparison on the frequency of conducting progress meeting could not be achieved. Furthermore, due to the limitation of the second set of semi-structured interview questions (discussed in chapters 3 and 9); the researcher was not able to obtain strong statements for motivation misalignment factor to stand on their own. These questions were designed initially to confirm previous themes emerging in chapters 5 and 6. This fact has also contributed to not being able to confirm the other themes not discussed in this case study. The next section is the analysis of case study 7, which is a project for the Construction of Trunk Sewers and Associated Treated Effluent System for Al Wathba (Lot 'B').

#### **7.4 Case Study 7 (Project O-1086B)**

This case study is Construction of Trunk Sewers and Associated Treated Effluent System for Al Wathba (Lot 'B'). The project was awarded to a local contractor (ADMAC). The overall cost of the project was AED 723,073,060. The construction phase of the contract was 18 months in duration plus a 12-month maintenance period. This case study was selected based on the cost and schedule index and categorised as one of the low performing projects. Data were collected using two instruments (semi-structured interviews and supporting documents). A lengthy semi-structured interview was conducted with the client project manager whose contact detail was obtained from the progress meetings reports. Two more, short duration, semi-structured interviews were carried out with the assigned consultant and contractor project managers. Their contact details were also obtained from the progress meeting reports. Table 7.18 includes general information about the project, interviews, and interviewees as well as the research method

**Table 7.18: Case General Information (Project O-1086B)**

Project	Client	Consultant	Contractor	Project Value
Construction of Trunk Sewers and Associated Treated Effluent System for Al Wathba (Lot 'B')	ADSSC	PIL	ADMAC	AED 723,073,060
Project Start Date	Project End Date	Methodology	Collection Method	Instruments
12 February, 2008	15 November, 2012	Case Study	Supporting Document and Interviews	Semi-structured, open-ended, direct/indirect, formal supporting document
Interviewees	Role in Project	Interview Type	Interview Duration	Location
Client Project Manager, C6-CL-IN1	Project Manager (Client)	Semi-structured	35 min	ADSSC Headquarter
Consultant Project Manager, C6-CL-IN2	Project Manager (Consultant)	Semi-structured	15 min	ADSSC Headquarter
Contractor Project Manager, C6-CL-IN3	Project Manager (Contractor)	Semi-structured	10 min	Phone

#### 7.4.1 Project Overview

This project was to construct the Trunk Sewers and Associated Treated Effluent System for Al Wathba (Lot 'B'). The scope of the works covered under the contract included the following:

- Construction of 2 X 1600 mm dia. GRP trunk sewers approximately 29.2 km long from the Inlet Flow Distribution Chamber (IFDC) at MAFRAQ WWTP to the proposed Al WATHBA WWTP, which includes NDM application at 2 locations and construction of associated chambers, including area M and E works, piles and thrust blocks.
- Construction of a 2400 mm dia. GRP emergency overflow pipeline approximately 14 km long from Al WATHBA WWTP and to be connected to an existing pipeline of the existing outfall structure at MUSSAFFAH channel, which includes NDM application at 7 locations and construction of associated manholes.
- Construction of TSE transmission mains comprising 300 mm to 2000 mm dia. GRP pipelines approximately 46 km long from the proposed Al WATHBA WWTP to KHALIFA Cities 'A', 'B', 'C', IPS-1 and IPS-3, which includes NDM application at 19 locations and construction of associated chambers including M and E works, piles and thrust blocks.
- Construction of a temporary access road approximately 6 km long along the pipeline route towards proposed Al Wathba WWTP.

- Maintenance of the works for a period of 365 days after successful completion, testing and commissioning of the same.

According to the official progress meeting reports, the contract started on 12 February 2008 for a period of 18 months and was due to be completed on 12 August 2009 plus a 12-month maintenance period. Additional works were issued to the contractor via variation orders.

On 14 March 2010, M/s. ADMAC submitted a request for a second extension of time (63 days), taking the contract up to 9th May 2010, to complete the emergency plan; this was followed by a no-claim letter. This was approved by ADSSC on 11 July 2010, making the second revised contract completion date 9 May 2010. Furthermore, on 7 December, M/s. ADMAC submitted a request for a third extension of time up to 18 July 2011, followed by a no-claim letter, which was submitted to ADSSC on 20 March 2011. This was approved by ADSSC on 16th May 2011, making the third revised contract completion date 18 July 2011. Additionally, on 14 April 2012, M/s. ADMAC submitted a request for a fourth extension of time up to 12th January 2013, followed by a no-claim letter. While trying to understand why time extension was given to the contractors on so many occasions as indicated in the progress meeting reports, the researcher assumed that client and consultant perception of overall project success was not only influenced by the contractor's project team industry-specific experience as they were other factors that the decision was based on. This delay in progress could be related to problem solving ability, regular project plan review, monitoring and Control Strategy, relationship with contracting parties, joint problem solving, remorse and realization of contingencies, inter-organizational trust, connection between contracting parties, perception of the situation, and identification of the problem.

Due to the factors related to taking action at late stage, periodical and timely progress meeting reports, internal control, regular project plan review, identification of the problem, overcoming difficulties, client dissatisfaction, monitoring and control, rescheduling activities are regular, and reallocating resources, the progress might have been influenced. For example, up to March 2008, no progress made on site since the contractor's activities might be limited to preparing submittals and obtaining approval for the quality plan as well as the key personnel. In April 2008, a site instruction letter was issued to ADMAC regarding the slow progress in dewatering activities. The

slow progress was believed to be due to the contractor's failure to secure enough resources and equipment and delivering materials on time.

During May 2008, actual progress was only around 2% after 99 days of the contract period. This was, again, due to the lack of sufficient labour, plant, and qualified key staff to meet the program. Up to July 2008, pipe laying progress was quite slow. According to the program, three pipe-laying groups were required in Area 1 for the Emergency Overflow line, but only one group was available at the site. Up to August 2008, actual progress was only 3%, whereas the plan was for 21.3%. Slow performance was again might be due to the lack of resources, such as manpower was 44.20% less than scheduled and equipment was 29.39% less than scheduled, especially cranes. This delay could be related to weakness within the project team, absence of knowledgeable member in the team, and absence of specialist members.

Due to the factors related to weak management to facilitate problems, overcoming the difficulties, coordination between parties, and problem solving ability, the progress might have been influenced. For example, in September 2008, pile work was supposed to start, according to the program, but it was delayed by the late submission of the method statement. As highlighted in the progress report, in order to recover the overall delay in the project, the contractor was requested to increase skilled experienced manpower (foremen, pipe fitter, carpenter, steel fixer, mason, etc., and equipment) at the site. Despite that request made in November 2008, the contractor was not able to increase resources. Additionally, during April 2009, following an approved time extension, there was slow progress in the construction of pile caps with only two casts, and the piles had been constructed on 11 February 2009. The contractor was requested to expedite the pile cap construction and to increase the number of team members. Towards the end of May 2009, overall planned progress was 43.65% (as per the revised program), whereas overall actual progress was only 36.09%. The contractor was requested to expedite submission of the outstanding materials as scheduled, specifically the long lead delivery items and the crane mounted truck. ADSSC/PIL officially stated that any consequences due to delay in material submittal would be solely the contractor's responsibility.

With overall planned progress (base program) 97.30% and overall planned progress (revised program) 54.00%, overall actual progress was only 42.28%. However, it was noted that the delay

shown at the previous meeting had increased, even with respect to comparison with the recovery program. ADSSC officially expressed concern over this extended period and requested ADMAC to reduce the time for presentation of the method statement, which could be prepared in conjunction with test plug design and manufacture. It was noted that ADMAC had previously committed to completing the testing of the last section of pipes adjacent to Al Wathba WWTP by 1 July 2009, which had not been achieved as ADMAC have failed to finalize appropriate testing arrangements. After discussion, it was noted that ADMAC needed approximately two weeks to provide the required bank guarantees, which ADSSC considered excessive. ADMAC was once again advised to increase manpower working on manhole construction in order to recover the delay. This could be related to action at the late stage, build upon and learn from prior mistakes, and problem solving ability perceived to be weak.

Due to the factors related to remorse and realization of contingencies, preference ranking, and perception of the situation, the progress might have been influenced. For example, with overall planned progress at 100.00% (as per revised program) and overall actual progress at 84.60%, it was noted that the delay shown at the previous meeting had also increased even in comparison with the revised program. On 14 March 2010, ADMAC submitted a request for a second extension of time (62 days), taking the contract end up to 9 May 2010, to complete the emergency plan. This was approved by ADSSC on 11 July 2010. The actual available manpower at the site was 457 and available equipment was 114, which were still below the plan.

During April 2011, there was a delay due to lack of resources in Areas 6, 8, and Diversion TSE line at the Mafraq Industrial Area along with the submission of method statements. Sufficient competent persons were not available to cover the work areas; therefore, ADMAC was instructed to increase the number of competent persons to cover workplace areas or to stop work where the area was not covered by safety staff. ADMAC had increased the labour force by only 68, with 12 items of heavy equipment since February 2011, but they had been advised to increase labour by 140 as well as machinery (especially excavators, shovels, and cranes), to recover the overall delay in the project and to complete the project in the revised schedule time, that is 18 July 2011. This delay could be related to weakness within the project team, absence of knowledgeable member in the team, and absence of specialist members.



By October 2012, overall planned progress showed 100.00%, whereas overall actual progress was 88.02%. It was noted that the delay shown at the previous meeting had increased, even with respect to comparison with the revised program; ADSSC again expressed concern over this continual delay. The actual available manpower at site was 450 and available equipment was 153; the available resources were not enough to complete the work in hand and to recover the delay. ADMAC stated that labour should be increased as the available key site staffs were insufficient to handle the work at the site. By November 2012, overall actual progress achieved 100% and the time taken was 1,739 days. This project is considered among the low performing projects due the intangible resources factors discussed in the next section.

#### **7.4.2 Findings and Discussion**

The findings of this case provided an explanation to research questions 1, 2 and 3 of the study and validated four themes leading to the project's success. The researcher discussed the research evidence comprising the influencing factor and quotes from the case study research, and the theme related to human, organizational, and relational capital category were presented as the following:

##### ***7.4.2.1 Human Capital/Study Objective 2/ Research Question 1***

The analysis of this case confirmed one human capital intangible resources theme. The individual experience (Theme 3) was validated. The findings provided more explanation to research question 1 of the study. The researcher discussed the research evidence comprising the themes as below:

#### **A. Individual Experience - (*Theme 3*)**

Appendix 2 contains the case study transcript along with interviews questions used. Table 7.19 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the individual experience theme for further discussion.

**Table 7.19: Final Coding for Individual Experience**

Final coding framework	Initial coding framework	
Individual Experience	<ul style="list-style-type: none"> <li>• project team is perceived to be weak</li> <li>• Action at the late stage</li> <li>• No experience with project-related activities</li> <li>• No Build upon and learn from prior mistakes</li> <li>• mistakes in future improvement projects</li> <li>• Problem solving ability perceived to be weak</li> </ul>	<ul style="list-style-type: none"> <li>• No knowledgeable member in the team</li> <li>• No specialist members</li> <li>• No experience of individuals</li> <li>• No proficient individual</li> <li>• effective routines for project improvement</li> <li>• no experience prior to the current project</li> <li>• proportional relation of experience and project success</li> </ul>

When the researcher was trying to confirm previously found factors related to human capital influencing project outcome, he asked the three interviewees about the influence of team experience, as noted in the following statement found in the progress meeting report on overall project performance:

- *PIL advised ADMAC to appoint enough experienced site staff (Foreman, Labours) in order to improve productivity. (Case 6 - Progress Meeting No.12)*

The interviewees' answers were:

- *Not all the team members were competent, and we highlighted this many times during meetings. This surely affected the performance in terms of meeting the time. (Client Project Manager, C7-CL-IN1)*
- *Insufficient number of labour force, plant and qualified key staff, to meet the program. (Consultant Project Manager, C7-CL-IN2)*
- *Team was not up to the level due to lack of resources and competencies. (Client Contractor Manager, C7-CL-IN3)*

Based on the above, the researcher assumed that project performance could have been improved by choosing more knowledgeable and experienced project team members. Having enough experience could have enabled the team to possess competencies necessary to execute a project

on time and to the standard required. Case informants believed that team experience was very important for the effectiveness and performance of the project, which the team might have been lacking throughout the duration of the project. This lack of team experience in the industry might have affected team competencies, which made the project performance slow and disabled to meet the handover dates (time), as can be clearly seen from the statements made in the following progress meeting reports:

- *PIL again instructed ADMAC to provide sufficient labour, plant and qualified key staff, to meet the program. (Case 7 - Progress Meeting No.5)*
- *3 site instructions had been issued to the Contractor regarding lack of manpower and equipment and materials. (Case 7 - Progress Meeting No.10)*
- *PIL stated ADMAC should increase skilled experienced manpower (foremen, pipe fitter, carpenter, steel fixer, mason, etc., and equipment at site, to recover the overall delay in the project. (Case 7 - Progress Meeting No.19)*
- *Overall actual progress was 42.28% – it was noted that the delay shown at the previous meeting had increased, even in comparison with the recovery program – ADSSC expressed continuing concern over this delay. (Case 7 - Progress Meeting No.33)*

The arguments presented in Case study 2, 3, and 5 indicate that the individual's experience is a determinant to the success of the project. The findings of the case indicate the industry-specific experience of the project team leader is paramount in the implementation of the project. An experienced project team leader can marshal the skills set within the team to accomplish the goals of a given project. The evidence present in Case study 2, 3, and 5 also indicates there is a relationship between the individual's growth and the organizational growth. The case studies suggest the individual's experience and competency levels increase as the organization grows. The individual's experience is beneficial to the organization and to the project as the individual develops key competencies in problem solving methodologies, development process improvement plans, implementing tracking systems, among many others. As argued in three mentioned cases, the key competencies from one project to another develop as the individual continually learns from the mistakes they make in the course of one project. Ideally, an individual should learn from their mistakes and apply their knowledge and experiences to the future projects (Argote 1999; Haas 2006). The continuous improvement process means the individual progressively develops effective routines that are applicable in completing future projects

(Huckman and Pisano, 2006; Huckman et al. 2009; Lapre and Nembhard, 2011; Pisano et al. 2001; Reagans et al. 2005; Shafer et al. 2001). The evidence provided in this case indicates the individuals were less proficient in developing effective routines for the successful completion of projects when the schedule slipped as stated by:

- *PIL stated that, ADMAC to increase skilled experienced manpower (foremen, pipe fitter, carpenter, steel fixer, mason etc. and equipment's at site to recover the overall delay in the project. (Case 7 - Progress Meeting No. 19)*

Therefore, based on this case finding, theme 3 was confirmed. The responses from the interviews in Table 7.20 show three additional statements coming from three different sources supporting the importance of individual experience for project success. These answers along with previous answers taken from table 6.10 of the cross-case chapter and case study 5 are strong enough to stand on their own and do not require further validation as they come from three different sources.

**Table 7.20: Statement supporting the importance of Individual Experience**

Theme 3	Supporting Statement
Individual Experience	<i>Every work was assigned to the member who is specialized and we had good number of people throughout. (Contractor Project Manager, C2-CL-IN3)</i>
	<i>DC stated that due to the lack of experience of the foreman and skilled labours, there is no significant progress. (Case 3-Progress Meeting 34)</i>
	<i>The project manager was not qualified and his team was not qualified. (Client PM, C3-CL-IN1)</i>
	<i>The team responsible for the hands on work was weak and were not good enough to work. (Consultant PM, C3-CL-IN2)</i>
	<i>This is pure technical work so the project team's technical skill [skill of all individual] should be high and it was high. (Contractor Project Manager, C2-CL-IN3)</i>
	<i>The team was so strong [all individual experience of members] to drive the project by themselves. (Consultant Project Manager, C2-CL-IN2)</i>
	<i>They [project team members] did not have previous experience in the sewerage so they lacked the technical competencies. (Consultant PM, C3-CL-IN2)</i>
	<i>As I mentioned, this was our first project and the team needed more similar project to build their competency and skill. (Contractor PM, C2-CL-IN3)</i>
	<i>The team experience was very high, which made it easier for them to make this project a successful project. (Client Project Manager, C5-CL-IN1)</i>
	<i>Team members have strong technical knowledge and they are specialized in this field. (Consultant Project Manager, C5-CL-IN2)</i>
	<i>The team experience was very high, which made it easier for them to make this project a successful project. (Client Project Manager, C5-CL-IN1)</i>
	<i>Not all the team members were competent, and we highlighted this many times during meetings. This surely affected the performance in terms of meeting the time. (Client Project Manager, C7-CL-IN1)</i>
	<i>Insufficient number of labour force, plant and qualified key staff, to meet the program. (Consultant Project Manager, C7-CL-IN2)</i>
	<i>PIL stated that, ADMAC to increase skilled experienced manpower (foremen, pipe fitter, carpenter, steel fixer, mason etc. and equipment's at site to recover the overall delay in the project. (Case 7 - Progress Meeting No. 19)</i>

#### **7.4.2.1 Organization Capital/Study Objective 2/ Research Question 2**

The analysis of this case revealed confirmation on two themes which are the top management support (Theme 6) and the monitoring and control strategy (Theme 11). The findings provide additional statements to provide explanations to research question 2 of the study. The researcher discussed the research evidence comprising the theme as below:

**A. Top Management Support - (Theme 6)**

Appendix 2 contains the case study transcript along with interviews questions used. Table 7.21 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the top management theme for further discussion.

**Table 7.21: Final Coding for Top Management Support**

Final coding framework	Initial coding framework	
Top Management Support	<ul style="list-style-type: none"><li>• No performance-enhancing initiatives</li><li>• team efficacy/potency is perceived to be weak</li><li>• Risk management</li><li>• Procurement strategy</li><li>• Weak management to devote time</li><li>• Weak management to review plan</li><li>• Weak management to follow up on results</li><li>• Weak management to facilitate problems</li><li>• Management support is a critical success factor</li></ul>	<ul style="list-style-type: none"><li>• employees leaving</li><li>• Problem solving ability is perceived to be weak</li><li>• Team is perceived not to have specialist members</li><li>• Unsuccessful project</li><li>• management support is perceived to be weak</li><li>• organization capital</li><li>• relationship capital</li><li>• realisation of benefits focus</li><li>•</li></ul>

The researcher attempted to find an explanation to research question 2 by confirming theme 6 found and based on the statement made in the progress meeting report:

- *After discussion it was noted that ADMAC were taking in the region of two weeks to provide the required bank guarantees, which ADSSC considered as excessive. (Case 7 - Progress Meeting No. 5)*

The researcher asked the three interviewees how top management influenced the overall outcome of the project. The case research evidence reveals that weak management support might have negatively affected the outcome of the project. Moreover, this finding is repeated throughout the interviews, as it was one of the major factors that were believed to contribute to the delayed project completion, as quoted below:

- *Enough manpower was really an issue for this project and had a very bad effect on project performance. We suggested the solution to use Alswaed, which is a manpower supply company, but that was not done. (Client Project Manager, C7-CL-IN1)*
- *Due to the delay in making decisions to select suppliers, there was a delay of 3 months until a decision taken to procure the pressure pipes from the Abu Dhabi Pipe Factory. (Client Project Manager, C7-CL-IN1)*
- *We suggested that but the suggestion was not taken seriously by the contractor. (Consultant Project Manager, C7-CL-IN2)*
- *It was against company policy to use Alswaed, plus you cannot find people with the right experience there. (Contractor Project Manager, C7-CL-IN3)*

Management might have failed in aligning the human and equipment resource elements, creating a management support issue. For the human resource elements, it was an experienced team familiar with the project needs, as stated below:

- *Not all the team members were competent, and we highlighted this many times during meetings, and this surely affected the performance in terms of meeting the time. (Client Project Manager, C7-CL-IN1)*
- *Insufficient numbers for labour, plant, and qualified key staff to meet the program. (Client Project Manager, C7-CL-IN1)*

These statements made by interviewees were confirmed by the following progress meeting reports:

- *ADMAC stated that visas for 1500 Employee were under process. Moreover, ADMAC could hire immediately any additional numbers from one of the biggest labour suppliers (AL-SAWAED). (Case 7 - Progress Meeting No. 1)*
- *PIL stated that the manufacturer of pressure pipes M/s. Abu Dhabi Pipe Factory (ADPF) was approved on 16 April 2008, but the production of pressure pipes had not yet started and ADMAC needed to expedite the production/delivery of pressure pipes. Any delay in this regard would be the contractor's responsibility. (Case 7 - Progress Meeting No. 9)*
- *PIL stated that the contractor has delayed more than 3 months until a decision was taken to procure the pressure pipes from the Abu Dhabi Pipe Factory. (Case 7 - Progress Meeting No. 11)*

The management also might have failed in retaining their employees at the end of the project, as stated:

- *Towards the end of the project, we noticed some staff resignations from the contractor's side and we asked for immediate replacement. This somehow had an effect on the project time. (Consultant Project Manager, C7-CL-IN2)*

Not providing an experienced team and ensuring project team continuity might have had negatively affected the project time. The management also might have failed in aligning the financial resource elements with the project needs, such as bank guarantees, as stated:

- *After discussion it was noted that ADMAC were taking in the region of two weeks to provide the required bank guarantees, which ADSSC considered excessive. (Case 7 - Progress Meeting No. 5)*

The bank guarantee is an essential element, and the team cannot start work without it.

Following the same definition presented in case 4, Top Management Support (TMS) is simply defined as the top management's involvement in the project from inception to the implementation of the project. According to the findings in Case studies 4 and 6 indicate the top management should review the project plans, as well as follow up on the interim findings, and intervene in management problems (Young and Jordan, 2008). The role of the top management is to offer guidance and supervision of the project, while the project's leadership team is in charge of the day to day running of the project. In this, the poor performance of the project can be attributed to the top management minimal involvement in the project especially in solving the manpower challenges. In this case, the top management did not dedicate time to resolving the conflict between the client and the contractor. While the progress meeting reports indicated there were challenges and risk factors, the top management did not develop any solutions. The client did not have enough authority and goodwill to coerce or influence the contractor to comply with the recommendations of the project. The top management ended up paying compensatory damages to the client instead of making the required structural and procedural changes. The intervention in management conflicts indicates the top management is willing to deal with the business risks that are freestanding of the authority of the project team as stated below:



- *It was against the company policy to use Alswaed plus you cannot find people with the right experience there* (Contractor Project Manager, C7-CL-IN3)

The results therefore support the conclusion that TMS is an important project success factor. They suggest that the essence of top management support relates to effective decision-making to manage risk and to authorise business process change. It appears that TMS is most dependent on the ability of the project client to work with other top managers to authorise business process changes and make decisions to mitigate or bear risk. Success also appears to be dependent on the willingness of the contractor top management to actively intervene when the client lacks the authority or influence to resolve any impasses in decision-making (Young and Jordan, 2008). Therefore, based on this case finding, theme 6 was confirmed. The responses from the interviews in Table 7.22 show one additional statement supporting the importance of top management support for project success. This answer along with previous answers taken from table 6.9 of the cross-case chapter are strong enough to stand on their own and do not require further validation as data coming from three different sources was achieved.

**Table 7.22: Statement supporting the importance of Top Management Support**

Theme 6	Supporting Statement
Top Management Support	<i>But the home office [top management] was delaying the material procurement. And this is was one of the major problems. (Client PM, C1-CL-IN1)</i>
	<i>The home office [top management] support was very weak mainly because of bad management. But the management was not there. The team's experience and management were weak. The managerial support was weak. The factor that may affect the project negatively is management. (Client PM, C3-CL-IN1)</i>
	<i>Management was from the client side and contractor side was good as they supported the team throughout the project. (Consultant PM, C2-CL-IN2)</i>
	<i>If their top management was not involved, this project would have not finished on time. (Client Project Manager, C5-CL-IN1)</i>
	<i>Good support from Besix management in this project. (Consultant Project Manager, C5-CL-IN2)</i>
	<i>We had many issues on this project and the management was there for us. (Contractor Project Manager, C5-CL-IN3)</i>
	<i>They always had shortage of man power and the management was not interested in supporting. (Client PM, C6-CL-IN1)</i>
	<i>They were not very much supportive. They could not help in assigning the right manager, the right experienced team, and good internal control. (Consultant PM, C6-CL-IN2)</i>
	<i>We requested the management to increase manpower but due to other commitment, they were not able to. (Consultant PM, C6-CL-IN2)</i>
	<i>Enough manpower was really an issue for this project and had a very bad effect on project performance. We suggested the solution [to contractor top management] to use Alswaed, which is a manpower supply company, but that was not done. (Client Project Manager, C7-CL-IN1)</i>

**B. Monitoring and Control Strategy - (Theme 11)**

Appendix 2 contains the case study transcript along with interviews questions used. Table 7.23 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the monitoring and control strategy theme for further discussion.

**Table 7.23: Final Coding for Monitoring and Control Strategy**

Final coding framework	Initial coding framework	
Monitoring and Control Strategy	<ul style="list-style-type: none"> <li>• Periodical and timely progress meeting reports</li> <li>• Internal control is perceived to be strong</li> <li>• Site visits are regular</li> <li>• site meetings are regular</li> </ul>	<ul style="list-style-type: none"> <li>• rescheduling activities are regular</li> <li>• reallocating resources</li> <li>• regular project plan review.</li> <li>• project's work programme timely updated</li> <li>• interim valuation and financial statements are available</li> </ul>

While the researcher was trying to confirm this theme, he asked interviewees about the influence of the internal control factor on the overall progress of the project. The feedback was:

- *We used to make progress meetings regularly which is a perfect way monitor the work and communicate issues and problem that may affect the progress of work. (Consultant Project Manager, C7-CL-IN2)*
- *We also conducted internal progress meetings to make sure that all problems are solved and work is as per schedule. (Contractor Project Manager, C7-CL-IN3)*

The findings in this case indicate that the internal controls put in place within the project might have contributed to improving the projects productivity. The evidence is provided by the progress reports that were submitted during the project. The progress reports played a key role in monitoring and controlling the progress of the project through periodical project progress meetings. The variables within the progress report were also significant in collecting the required information to monitor and control the progress of the project. The variables within the progress report include site visit, site meeting, interim valuation, and the presentation of the financial statements to monitor the project. On the other hand, the variables that control the progress of the project include rescheduling activities, reallocating resources and altering project objectives involved project plan review, scope and objectives:

- *We had a very tight monitoring through timely progress meeting to put things on track as without doing this the project would have taken even longer time to finish. (Client Project Manager, C7-CL-IN1)*

- *Communication was fine and there was no major issue. Through timely progress meeting, we were able to avoid communication issues. (Client Project Manager, C7-CL-IN1)*

The responses from the interviews in Table 7.24 show three additional statements coming from one source which supports the importance of monitoring and control strategy for project success. This answer along with previous answers taken from table 6.9 of the cross-case chapter are strong enough to stand on their own and do not require further validation as data coming from three different sources was achieved.

**Table 7.24: Statement supporting the importance of Monitoring and Control Strategy**

Theme 11	Supporting Statement
Monitoring and Control Strategy	<i>Internal control is a very important part of the project. Through frequent meetings and strict schedule to follow and good cost control, were able to do a very good project control. (Contractor PM, C2-CL-IN3)</i>
	<i>To avoid facing problem with this, we use to highlight the importance of this in almost all of our meetings so we were able to control and monitor it. (Client PM, C2-CL-IN1)</i>
	<i>We had a very tight monitoring through timely progress meeting to put things on track as without doing this the project would have taken even longer time to finish. (Client Project Manager, C7-CL-IN1)</i>
	<i>Communication was fine and there was no major issue. Through timely progress meeting, we were able to avoid communication issues. (Client Project Manager, C7-CL-IN1)</i>
	<i>We used to make progress meetings regularly which is a perfect way monitor the work and communicate issues and problem that may affect the progress of work. (Consultant Project Manager, C7-CL-IN2)</i>

#### **7.4.2.2 Relational Capital/Study Objective 2/ Research Question 3**

The analysis of this case also revealed confirmation on one theme which is the joint problem solving (Theme 8). The findings provide additional statements to provide an explanation to research question 3 of the study. The researcher discussed the research evidence comprising the theme as below:

**A. Joint Problem Solving - (Theme 8)**

Appendix 2 contains the case study transcript along with interviews questions used. Table 7.25 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the joint problem solving theme for further discussion.

**Table 7.25: Final Coding for Joint Problem Solving**

Final coding framework	Initial coding framework	
Joint Problem Solving	<ul style="list-style-type: none"><li>• Knowledge sharing</li><li>• Perception of the situation</li><li>• Identification of the problem</li><li>• Preference ranking</li><li>• Exploration for alternative solution</li><li>• Remorse and realization of contingencies</li><li>• Situation</li><li>• Implement</li><li>• Readiness</li><li>• Inter-organizational trust</li><li>• decision and action plan</li><li>• overcoming the difficulties</li><li>• reach a solution</li></ul>	<ul style="list-style-type: none"><li>• Communication is perceived to be weak</li><li>• Unsuccessful project</li><li>• Client dissatisfaction</li><li>• Monitoring and control</li><li>• human capital</li><li>• Connection between contracting parties is perceived to be weak</li><li>• organization capital</li><li>• Coordination between parties is perceived to be weak</li><li>• relationship capital</li><li>• relationship with contracting parties is perceived to be weak</li><li>• Social capital</li><li>• trying solutions</li></ul>

When the client and the consultant interviewees were asked how the problem solving ability factor influenced the project negatively, they stated:

- *I guess problem-solving ability combined with decision making and management support.*  
(Client Project Manager, C6-CL-IN1)
- *Towards the end of the project, we noticed some staff resignations from the contractor's side and we asked for immediate replacement. This somehow had an effect on the project time.* (Consultant Project Manager, C6-CL-IN2)

The research evidence reveals that, for an effective project, the project team should be supported to take action proactively and promptly with regards to problem solving. In order to further

confirm the reason behind this weakness in problem solving and as part of the process of iteration back and forth between steps, the researcher asked the two interviewees why the lack of problem solving ability from the contractor side was an issue throughout the project. The feedback was:

- *You need to be supported to be able to solve problems easily. (Client Project Manager, C7-CL-IN1)*
- *Contractor's management was not supportive. (Consultant Project Manager, C7-CL-IN2)*

Furthermore, following the statements made above, the researcher asked both of the client and consultant interviewees how their senior management influenced the project in term of problem solving. The feedback was:

- *It was the contractor issue so our management should not be part of this. (Client Project Manager, C7-CL-IN1)*
- *My management was not involved. (Consultant Project Manager, C7-CL-IN1)*

In this case, the arguments presented in 5.5.2.2 of Case study 3 reveal the importance of a establishing a good working relationship among the contracting parties. The interviews in this case reveal the lack of cooperation and goodwill among the client, consultant, and the contracting representatives. There is also an indication that the poor working relationships contributed negatively to the development of the oversight mechanism within the project. The lack of trust and cooperation among the contracting parties indicates the development of the informal supervisory mechanism was inhibited. The contracting parties were unable to synchronise with each other (Ebberts and Wijnberg, 2009), and as a result they could not develop effective strategies to deal with the problems they were facing appropriately and effectively way (Uzzi 1997). One interviewee stated:

- *Projects are always full of problems and sometimes you need a very strong support from clients and your management to be able to solve them as the case of materials, equipment and team in this project. (Contractor Project Manager, C7-CL-IN3)*

The unfavorable working environment might have affected the level of communication during the project, and also inhibited the speed of transactions between the contracting parties. According to (Granovetter 1985) and (Uzzi 1997), the quality of the relationships between contracting parties can have an impact on the time performance of projects. The results in this case indicate poor and

under developed working relationships between contracting parties possibly will result with lower satisfaction as stated below:

- *Team was not up to the level due to lack of resources and competencies.* (Client Project Manager, C7-CL-IN1)

The results further indicate that well-developed and positive working relationships develop trust among contracting parties. The trust developed among the parties is critical in creating trust and commitment towards the attainment of project objectives (Uzzi 1996). The parties also have the opportunity to share their knowledge and experiences, as well as the challenges they are facing in the duration of the project (Chinowsky et al. 2008). According to (Ebbers and Wijnberg, 2009), a good working relationship also forms a good foundation for the establishment of contract management, which is not dependent on official controls (Dekker and Abbeele, 2011) to provide oversight. One interviewee stated;

- *We suggested that but it the suggestion was not taken seriously by the contactor* (Consultant Project Manager, C6-CL-IN2)

Such trust might have improved project time and client satisfaction. Therefore, in order to develop better relationships, joint understanding among contracting parties is crucial. The parties must be able to distinguish the objectives and requirements of the other contracting parties and how these communicate their own role. This will let the parties accomplish a common goal in a good way. A base of joint understanding delivers an actual means to report difficulties because each party will recognize the concerns and circumstances faced by the other parties which might not have been present in this case study. One interviewee stated:

- *Projects are always full of problems and sometimes you need a very strong support from clients and your management to be able to solve them as the case of materials, equipment and team in this project.* (Contractor Project Manager, C7-CL-IN3)

Devising progressions such as the timely progress meetings in place that will result with operational problem solving and fewer conflicts subsidizes the developments of better relationships. There was strength in this part of the project resulted in completing the project at the end as stated below:

- *We had a very tight monitoring through timely progress meeting to put things on track as without doing this the project would have taken even longer time to finish. (Client Project Manager, C7-CL-IN1)*

The findings of the case also indicate open communication might also play a key role in the implementation of a successful project (Chen and Chen, 2007). Open communication is important during phases of the project, but is especially beneficial during the inception of the project. Open communication is also important in problem identification and conflict resolution (Chan et al. 2004). The findings of this case suggest that if contracting parties have open communication they can prevent disputes from developing into conflict (Wong and Cheung, 2005), as well as reduce the number of misunderstandings, reworks, and delays among contracting parties (Love et al. 2010). Open communication is also useful in developing consensus in conflict resolution (Chen and Chen, 2007) since differences are evaluated efficiently and studiously (Wong and Cheung, 2005). The presence of open lines of communication might have contributed to finally complete the project in this project case. One interviewee stated:

- *We used to make progress meetings regularly which is a perfect way monitor the work and communicate issues and problem that may affect the progress of work. (Consultant Project Manager, C7-CL-IN2)*

The findings of the previous sections highlight the importance of a good working relationship, and open lines of communication in the successful implementation of a project. There is nevertheless an indication of the complexity of developing relationships among contracting parties. According to (Macneil 1986b), one of the ways of developing a conducive working relationship is through timely information sharing among contracting parties. Once the contracting parties have established a precise and impartial information sharing process, they easily develop trust since the parties hold pertinent and updated information. At the inception of the project having the right information means the contracting parties can mitigate any risks they face in the project, as well as develop solutions to any anticipated problems within the project. The findings in this case indicate that information sharing is a critical element in building trust, and strengthening relationships among the contracting parties. The findings in this case support theme 8. The responses from Table 7.26 show two additional statements that support the importance of joint problem solving mechanisms within the framework of the project. The confirmation of Theme 8,



the responses of Table 7.26, as well as the answers taken from Table 6.10 are strong enough to stand on their own and do not require further validation as data coming from three different sources was achieved.

**Table 7.26: Statement supporting the importance of Joint Problem Solving**

Theme 8	Supporting Statement
Joint problem solving	<i>We [contracting parties] kept an eye especially on this [a problem] as they were many of them. That is due to the controlled [solving] plan we set. (Consultant Project Manager, C4-CL-IN2)</i>
	<i>We [contracting parties] understand the importance of the control so we decided to do weekly monitor to overcome any issue quickly. (Contractor Project Manager, C4-CL-IN3)</i>
	<i>To avoid facing problem with this, we [contracting parties] use to highlight the importance of this in almost all of our meetings so we were able to control and monitor it. (Client Project Manager, C4-CL-IN1)</i>
	<i>We [contracting parties] dedicated a member only looking after this [monitoring and control]. Team was always in good relation and we managed to improve the average progress as we put more focus and works started to open. (Contractor Project Manager, C4-CL-IN3)</i>
	<i>We [contracting parties] were not getting support from these authorities and made things too complicated for us. (Contractor Project Manager, C6-CL-IN3)</i>
	<i>Projects are always full of problems and sometimes you need a very strong support from clients and your management to be able to solve them as the case of materials, equipment and team in this project. (Contractor Project Manager, C7-CL-IN3)</i>
	<i>You need to be supported to be able to solve problems easily. (Client Project Manager, C7-CL-IN1)</i>

#### 7.4.3 Summary of Findings for the Case

The analysis of this case confirmed the individual experience (Theme 3), top management support (Theme 6), monitor and control strategy (Theme 4), and joint problem solving (Theme 7). The responses from the interviews show three additional statements coming from three different sources supporting the importance of individual experience for project success. These answers along with previous answers taken from the cross-case chapter and case study 5 are strong enough to stand on their own and do not require further validation as they come from three different sources. Similarly, the responses from the interviews show one additional statement supporting the importance of top management support for project success. This answer along

with previous answers taken from the cross-case chapter are strong enough to stand on their own and do not require further validation as data coming from three different sources was achieved. Additionally, the responses from the interviews show three additional statements coming from one source supporting the importance of monitoring and control strategy for project success. This answer along with previous answers taken from the cross-case chapter are strong enough to stand on their own and do not require further validation as data coming from three different sources was achieved. Similarly, the responses from the interviews show two additional statements supporting the importance of joint problem solving for project success. These answers along with previous answers taken from the cross-case chapter show that collective problem solving affect project success. These answers are now strong enough to stand on their own and do not require further validation as data coming from three different sources was achieved.

As for the other themes not discussed in this case study, they need to be observed carefully in the following cases and should be focused on. However, this case study provided some statements related to leadership technical skill. There were not presented in the finding and discussion section because they have already been validated in one of the previous cases. This evidence is included in the case study transcript at appendix 2 for future use. Furthermore, due to the limitation of the second set of semi-structured interview questions (discussed in chapters 3 and 9); the researcher was not able to validate some themes not discussed in this case study. These questions were designed initially to confirm previous themes emerged in chapters 5 and 6. The next section is the analysis of case study 8, which is a project for Al Ain Asset Enhancement Scheme - Construction of Trunk Sewer Network and TSE Infrastructure – Part 1.

### **7.5 Case Study 8 (Project O-1434)**

This case study is a project for the Al Ain Asset Enhancement Scheme – Construction of Trunk Sewer Network and TSE Infrastructure – Part 1. The project was awarded to a local contractor (GCC). The overall cost of the project was AED 749,926,278.38. The construction phase of the contract was 24 months in duration. This case study was selected based on the cost and schedule index and categorised as one of the high performing projects. Data were collected using two instruments (semi-structured interviews and supporting documents). A lengthy semi-structured interview was conducted with the client project manager whose contact detail was obtained from the progress meetings reports. Two more, short duration, semi-structured interviews were carried out with the assigned consultant and contractor project managers. Their contact details

were also obtained from the progress meeting reports. Table 7.27 includes general information about the project, interviews, and interviewees as well as the research method.

**Table 7.27: Case General Information (Project O-1434)**

Project	Client	Consultant	Contractor	Project Value
Al Ain Asset Enhancement Scheme - Construction of Trunk Sewer Network and TSE Infrastructure – Part 1	ADSSC	Hyder Consulting Middle East LTD	GCC	AED 749,926,278.38
Project Start Date	Project End Date	Methodology	Collection Method	Instruments
10th October 2010	31st July 2013	Case Study	Supporting Document and Interviews	Semi-structured, open-ended, direct/indirect, formal supporting document
Interviewees	Role in Project	Interview Type	Interview Duration	Location
Client Project Manager, C8-CL-IN1	Project Manager (Client)	Semi-structured	30 min	ADSSC Headquarter
Consultant Project Manager, C8-CL-IN2	Project Manager (Consultant)	Semi-structured	15 min	Phone
Contractor Project Manager, C8-CL-IN3	Project Manager (Contractor)	Semi-structured	12 min	Phone

### 7.5.1 Project Overview

This project was to construct the Trunk Sewer Network and TSE Infrastructure – Part 1 in Al Ain. The Al Ain Asset Enhancement Scheme (AES) is intended to address a mixture of strategic and conceptual needs. AES is being implemented in tandem with other components of the CIP (the construction of a new pumping station at AL Hamah Waste Water Treatment Plant and the construction of an intermediate pumping station with two reservoirs and chlorination facilities). Each of the pumping stations has a capacity of approximately 2,200 litres per second. It involves construction of twin pumping mains of approximately 42.3 km trench length, from the pumping station at Al Hamah to the intermediate pumping station and from the Intermediate Pumping Station to the existing pumping station at area M10. The work was awarded to GCC on 10 October 2010 with a deadline of 9 October 2012. The main elements of the project were:

### **Gravity Trunk Sewer**

- Construction of around 26 km of 1800 mm dia. gravity sewer line open cut and 4 km will be constructed by micro-tunnelling techniques. Depth ranges between 4 m and 16 m.
- Construction of 400 mm to 800 mm diameter bypass gravity sewers from existing sewage pumping stations and others to new interceptor sewer, 1.3 km in length. Depth ranges between 0.6 m and 15 m.
- Construction of 200 mm to 1000 mm diameter gravity sewers and overflow pipelines from the intermediate pumping station to the new interceptor sewer, 3 km in length. Depth ranges between 0.8 m and 15 m.
- Construction of 160 mm to 1000 mm diameter gravity sewers from the emergency bypass pumping station to the new interceptor sewer, 0.5 km in length. Depth ranges between 0.9 m and 4 m.
- Construction of 203 manholes.

### **Pumping Station System**

- Construction of pumping station at Al Hamah with a capacity of approximately 2200 litres per second.
- Construction of twin 1200 mm diameter pumping main of 23 km each from Al Hamah pumping station to the Intermediate pumping station.
- Construction of intermediate pumping station with a capacity of approximately 2200 litres per second.
- Construction of two reservoirs at the Intermediate pumping station, 20,000m capacity each.
- Construction of twin 1200 mm diameter pumping main of 7.5 km each from the Intermediate pumping station to the existing Zakher Waste Water Treatment Plant.
- Construction of auxiliary building and structures
- Construction of 6 No. crossover chambers
- Construction of 53 air valve chambers

- Construction of 33 shut-off valve chambers
- Construction of 40 washout valve chambers
- Construction of 7 flow control valve chambers
- Construction of 10 flow meter chambers
- Supply, installation, testing and commissioning of new control room at area M10.

#### **Emergency Bypass Pumping Station and Lagoon**

- Construction of emergency bypass pumping station with a capacity of approximately 800 litres per second.
- Construction of 1200 mm diameter pumping main of 0.615 km together with discharge chamber and outfall structure.
- Construction of lagoon with a capacity of 678,000 m<sup>3</sup>.

Due to the factors related to industry-specific experience, recovery plan, team-based problem-solving, team ability to expedite work, planning ability, previous experience working together, and coordination losses between team members, the progress might have been influenced. For example, as documented in the progress meeting reports, after 72 time days (8.86%), planned progress was 1.57% and the actual progress was 0.25%. The slow progress might be due to the fact that the contractor was facing problem with labour services and facilities at the site. To compensate for the slow progress at the initial stage of the project, they increased the progress in trial holes works by deploying more resources. With 151 elapsed days (20.68%), planned progress was 12.9% and the actual progress was 3.1%. To cover the gap, the contractor proposed a revised base program. The two-week recovery program was mainly to focus on the two weeks' activities in order to achieve easy monitoring and following the planned and actual activities. Furthermore, with 179 days having elapsed (24.52%), planned progress was 16.75% and the actual progress was 4.3%. To increase progress, a request was made to the management to work after normal working hours, and the contractor would increase their groups along the open areas in normal working hours. Additionally, according to the official progress meeting reports, with 290 days of the contract period (39.73%), planned progress was 39.19% and actual progress was 21.16%. This gap between the planned and actual percentages was due to the fact that some works had not started. For example, a provisional item was awaiting ADSSC's instructions to proceed, such as

lagoon liner and its compounds. To cover the gap, the contractor would increase planned progress by 0.5% every month during these 6 months, following which they would try to increase planned progress by 2% per month. With 339 days having elapsed (50.33%), planned progress was 41.53% and actual progress was 30.04%. This improved progress might be due to the implementation of the above plan. To further increase progress, a request was made by the consultant to provide an inspector for the night shift during casting in the pumping station.

After 533 days (73.01%), planned progress was 85.16%, late planned progress was 71.93% and actual progress was 58.37%. This gap might be due to delay in the construction of the air release valve chambers and 98 chambers. With 668 elapsed days (91.51%), planned progress was 93.6%, late planned progress was 88.13%, and actual progress was 77.08%. A revised recovery program was approved, extending the completion date up to the end of March 2013 due to the manufacturer delivering and installing the required materials for the surge vessel chambers and its piping works and also the new additional branches at area M4. With 961 days of the contract having elapsed (131%), planned progress was 100% and actual progress was 96.31%. The contractor completed the snag list and the small amount of pending work and handed over the project on 31 July 2013. This project is considered among the high performing projects due the intangible resources factors discussed in the next section.

### **7.5.2 Finding and discussion**

The discussion in this section provides explanations to research question 1 of the study and validated two themes leading to the project's success. The researcher discussed the research evidence comprising the influencing factor and quotes from the case study research, and the theme related to human capital was presented as the following.

#### ***7.5.2.1 Human Capital/Study Objective 2/ Research Question 1***

The analysis of this case confirmed two human capital intangible resources themes. The team familiarity (Theme 2) and organizational experience (theme 4) were validated. The findings provided more explanation to research question 1 of the study. The researcher discussed the research evidence comprising the themes as below:

#### A. Team Familiarity - (Theme 2)

Appendix 2 contains the case study transcript along with interviews questions used. Table 7.28 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present themes for further discussion.

**Table 7.28: Final Coding for Team Familiarity**

Final coding framework	Initial coding framework	
Team Familiarity	<ul style="list-style-type: none"><li>• Team is perceived to have good industry-specific experience</li><li>• willingness to engage in a relationship</li><li>• Good operational performance</li><li>• group identity</li><li>• issues were “worked out” previously</li><li>• facilitates amount and quality of information exchanged</li><li>• Project succeeded</li><li>• Recovery plan</li></ul>	<ul style="list-style-type: none"><li>• team-based problem-solving</li><li>• Team ability to expedite work</li><li>• trust among team members</li><li>• Good team planning ability</li><li>• knowledgeable member in the team</li><li>• No coordination losses between team members</li><li>• Previous experience working together</li><li>• team is perceived to be cohesive</li></ul>

As the researcher was trying to confirm the experience theme, he asked the three interviewees to explain the following statement found in the progress meeting report and the influence on project outcome:

- *The resources on site seem (at this stage) to be sufficient for completion of the works on time.* (Case 8 –Progress Meeting No. 29)

The interviewees’ answers were:

- *All were good and that it is why we did not have major issues during the project.* (Client Project Manager, C8-CL-IN1)
- *The project manager was the right man for this job. His team had the right experience.* (Consultant Project Manager, C8-CL-IN2)

- *I have enough experience I developed doing similar projects so it helped. My team had enough experience to do such work. Without the experience we had, the project would have been affected.* (Contractor Project Manager, C8-CL-IN3)

The results in this case confirm the fact that team experience influences the performance and successful implementation of a project. The case participants are convinced of the importance of team experience in implementing an effective and successful project. According to the arguments presented in Case study 3, there is a consensus among researchers that teamwork often involves interdependent tasks in attaining team effectiveness (Alzahrani and Emsley, 2013; Cooke-Davies, 2002; Duy et al. 2004; Easton and Rosenzweig, 2012). The researchers also ascertain that the team-level factors are important in the overall performance of the team. One interviewee stated:

- *All were good and that it is why we did not have major issues during the project".* (Client Project Manager, C8-CL-IN1)

As argued in Case 2 and 3, the team-level factors include the performance strategies formulated by the team, the coordination losses of integrating a new team, the existing team cohesiveness, the cumulative experience of working together as a group, and the identity the team has assigned itself among many others (Hackman, 1987, 2003; Hackman and Wageman, 2005; Choo et al. 2007a; Faraj and Sproull, 2000; Easton and Rosenzweig, 2012). In this particular case study, the project team assigned to the project had a history of working together on previous projects as stated;

- *We have been in business for long and we have dealt with all authorities as we executed many projects in the past. During these years, we built very strong relationship with authorities.* (Contractor Project Manager, C8-CL-IN3)

Following the same argument presented in case 2 and 3, when the assigned team has worked together in the past, there is a general assumption that the team will not suffer coordination losses since the team members are familiar with each other. The team also enjoys high team cohesiveness since any conflict issues within the team have been ironed out in past team projects (Banker et al., 2001; Huckman et al. 2009; Reagans et al. 2005; Tuckman 1977; and Easton and Rosenzweig, 2012). In this case, the team's ability to deal with the emerging issues might have been high since the team had previous working experience as stated below:



- *The team was good in solving the problem and if it had not been solved quickly, it could have delayed the project as labors are the main driver for the activities.* (Client Project Manager, C8-CL-IN1)

There is the possibility that working together in the past ensured that only the most qualified team member was selected for the task that matched their skills sets and qualifications (Faraj and Sproull, 2000; Liang et al. 1995) as stated:

- *I worked with our planning engineer closely and we made sure we plan for everything ahead of time.* (Contractor Project Manager, C8-CL-IN3)

There is also the probability that familiarity among team members promotes a conducive environment for information sharing. Familiarity enhances good quantity and quality of the information exchanged within the team (Edmondson 1999; Lapre and Nembhard, 2011; Uzzi 1997) as stated:

- *their planning was good and this could be noticed when making a recovery plan when the project schedule slipped* (Client Project Manager, C8-CL-IN1)

According to Huckman et al. (2009) and Reagans et al. (2005), the team's industry-specific experience might have contributed to the team's ability to implement not only a successful project, but also meet the quality standards specified by the client. The work performed by the team is considered to be specialized and technical since the team members had worked on a different project in the past. One of the interviewees in the case study stated:

- *We have been in business for long and we have dealt with all authorities as we executed many projects in the past. During these years, we built very strong relationship with authorities.* (Contractor Project Manager, C8-CL-IN3)

Furthermore, following the same argument presented in case 2 on coordination losses and team effectiveness, due to the strong team familiarity factor, the team was able to expedite the work to compensate for the material delivery delay and therefore help in avoiding delay in handing over the project. One interviewee stated:

- *Their planning was good and this could be noticed when making a recovery plan when the project schedule slipped* (Client Project Manager, C2-CL-IN1)

To sum up, as discussed earlier in the study, team familiarity is an important factor associated with project success, at least in the context of an organization with a well-developed and deployed structured problem-solving process. The main managerial implication of this finding is that project leaders need to staff their teams with members that have experience working with one another on prior improvement projects, which certainly increases the flexibility of staffing such projects. Considering team familiarity worries aside, team leaders can focus their efforts on targeting the appropriately skilled individuals to join their improvement teams. The responses from the interviews in Table 7.29 show statements coming from different sources supporting the importance of team familiarity for project success. These answers along with previous answers taken from table 6.10 of the cross-case chapter are now strong enough to stand on their own and do not require further validation as data coming from three different sources was achieved.

**Table 7.29: Statement supporting the importance of Theme 2**

Theme	Supporting Statement
Team Familiarity (Theme 2)	<i>The team experience [working together] was excellent, which enabled them to execute the project successfully and smoothly.</i> (Client Project Manager, C2-CL-IN1)
	<i>The team was very good and had many years of experience [working together], as the company was specialized in this type of work.</i> (Consultant Project Manager, C2-CL-IN2)
	<i>Doing so many projects [together] with the same nature is actually a good hand on training.</i> (Consultant Project Manager, C2-CL-IN2)
	<i>It was not so good [working together]. They used to just raise the problem and not trying to solve and that is it. For example, they will raise problem for any major or minor activities such as excavation.</i> (Client PM, C3-CL-IN1)
	<i>We have been in business for long and we have dealt with all authorities as we executed many projects in the past. During these years, we built very strong relationship with authorities.</i> (Contractor Project Manager, C8-CL-IN3)
	<i>The team [working together] was good in solving the problem and if it had not been solved quickly, it could have delayed the project as labours are the main driver for the activities.</i> (Client Project Manager, C8-CL-IN1)
	<i>Their [the project team] planning was good and this could be noticed when making a recovery plan when the project schedule slipped</i> (Client Project Manager, C2-CL-IN1)

#### B. Organization Experience - (Theme 4)

Appendix 2 contains the case study transcript along with interviews questions used. Table 7.30 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the organization experience theme for further discussion.

**Table 7.30: Final Coding for Organization Experience**

Final coding framework	Initial coding framework	
Organization Experience	<ul style="list-style-type: none"><li>• project team is perceived to be strong</li><li>• Knowledge sharing</li><li>• Knowledge generated by other members</li><li>• organizational memory</li><li>• task-related information and knowledge</li><li>• access to prior project-related materials</li><li>• documented learning</li><li>• project database for experts opinion on issue</li></ul>	<ul style="list-style-type: none"><li>• Problem solving ability is perceived to be strong</li><li>• Team is perceived to have specialist members</li><li>• previous long experience</li><li>• access to organizational experience</li><li>• Better sense to what works and what does not</li><li>• team receptive to improvement</li><li>• Organizational experience grows, individuals opportunities for to benefit from knowledge accumulated from others increase</li></ul>

In this case, the findings in Case study 2, 3, and 5 can be postulated into this particular case. Following the same argument, according to Anand et al. (2010), Fiol and Lyles (1985), Lapre and Nembhard (2011), and Reagans et al. (2005), the information generated by the members of the team in previous projects should be beneficial to the other members of the team. The experience and knowledge accrued by the members of the team from previous projects can be shared if the working environment is positive and is there is a positive interpersonal relationship among the team members. In this case, there is an indication that there was optimal information sharing based on the good working relationship and interpersonal relationships demonstrated in the case. The interviewees of the case study stated:

- *Relationship was excellent and no issue noted throughout the project otherwise it could affect the project quality, time. (Client Project Manager, C8-CL-IN1)*

As argument in the three cases, the information shared among different members of the team is classified as organizational experience (Anand et al. 2010; Fiol and Lyles, 1985; Lapre and Nembhard, 2011; Reagans et al. 2005). The information shared by individual members of the team, as well as archived documentation of previous projects is a critical source of organizational experience. The archived documents in particular provide the team members with a soft and hard organizational memory of the task related knowledge and information (Faraj and Sproull, 2000; Haas 2006; Huber 1991; Kim 1993; Yao et al. 2012). In this case, there is evidence to suggest the team members had access to archived documentation of previous projects since the contractor had many years of technical and specialized work experience as stated by the interviewees:

- *We have been in business for long and we have dealt with all authorities as we executed many projects in the past. During these years, we built very strong relationship with authorities.* (Contractor Project Manager, C8-CL-IN3)

Therefore, as concluded in case 2, 3, and 5, project team members might have been able to readily access and make good use of a variety of prior project-related materials, such as project planning documents, documented learning, detailed description of analyses conducted, etc. For instance, one of the different project reports prompts teams to document the key learning to date, including areas outside the scope of the current project so the knowledge gained can be readily applied. With regards to the soft information, project team members can access the project database to find expert opinions with respect to a particular issue. Therefore, such access to the organizational experience, the assigned project team members might have had a better sense as to what did not work and what worked, and as a result, they did not have to experiment with different possible routines (Reagans et al., 2005). This was felt from the evidence related to the team ability to solve problem as stated below:

- *The team was good in solving the problem and if it had not been solved quickly, it could have delayed the project as labours are the main driver for the activities.* (Client Project Manager, C8-CL-IN1)

In conclusion, as argued in case 2, 3, and 5, there is a direct interdependence between the growth in individual experience and organizational experience. As the individual develops experience, others within the organization benefit from the individuals accumulated experience. The organizational experience also contributes to the development of training plans within the

organization. The organization is able to determine the knowledge gaps, and plan learning programs to meet the needs not filled by the organizational experience. The process of particularly successful if the project team leader is open to the idea of continuous process improvement in the implementation of projects within the organization (Benner and Tushman, 2002; Reagans et al. 2005; Upton and Kim, 1998). In this case, it is anticipated that the accumulated knowledge and organizational experience will benefit the organization and increase the success of the implemented projects in the future. One interviewee stated:

- *I have enough experience I developed doing similar projects so it helped. My team was having enough experience to do such work. Without the experience we had, the project would have been affected.* (Contractor Project Manager, C8-CL-IN3)

This statement also shows that organizational experience for the assigned contractor might have been strong due to the facts that the contractor had previous long experience working on similar specialized highly technical projects.

The responses from the interviews in Table 7.31 shows statements coming from different sources supporting the importance of organization experience for project success. These answers along with previous answers taken from table 6.10 of the cross-case chapter and case study 5 are now strong enough to stand on their own and do not require further validation as data coming from three different sources was achieved.

**Table 7.31: Statement supporting the importance of Theme 4**

Theme	Supporting Statement
Organization Experience (Theme 4)	<i>The team [the contractor] was very good and had many years of experience, as the company was specialized in this type of work. (Consultant Project Manager, C2-CL-IN2)</i>
	<i>Because [low project performance] Al Jabir contracting company project in the sewerage industry is little. (Client PM, C3-CL-IN1)</i>
	<i>All of the team members were new to the sewerage industry and had little experience [including their company]. The management wanted to go into this industry so this was our first project. (Contractor PM, C3-CL-IN3)</i>
	<i>They [the contractor company] did not have previous experience of sewerage so they lacked the technical competencies. (Consultant PM, C2-CL-IN2)</i>
	<i>Whenever we have a technical problem, we refer to our database document [of the company] for different technical options. (Contractor Project Manager, C5-CL-IN3)</i>
	<i>They have done many similar projects. They were able to brainstorm to solve problems quickly. Proper training and Lesson learn document [available at the company] from previous projects surely helping them. (Consultant Project Manager, C5-CL-IN2)</i>
	<i>We [the contractor company] have been in business for long and we have dealt with all authorities as we executed many projects in the past. (Contractor Project Manager, C8-CL-IN3)</i>

### 7.5.3 Summary of Findings for the Case

The analysis of this case confirmed the team familiarity (Theme 2) and organization experience (Theme 4). The responses from the interviews show statements coming from different sources supporting the importance of team familiarity for project success. These answers along with previous answers taken from the cross-case chapter are now strong enough to stand on their own and do not require further validation as data coming from three different sources was achieved. Similarly, the responses from the interviews show statements coming from different sources supporting the importance of organization experience for project success. These answers along with previous answers taken from the cross-case chapter and case study 5 are now strong enough to stand on their own and do not require further validation as data coming from three different sources was achieved.

As for the other themes not discussed in this case study, they need to be observed carefully in the following cases and should be focused on. However, this case study provided some statements related to control and monitoring strategy (Theme 10) and joint problem solving (Theme 7). There were not presented in the finding and discussion section because they have already been validated in previous cases. This evidence is included in the case study transcript at appendix 2 for

future use. Furthermore, due to the limitation of the second set of semi-structured interview questions (discussed in chapters 3 and 9), the researcher was not able to validate some themes not discussed in this case study. These questions were designed initially to confirm previous themes emerged in chapters 5 and 6. The next section is the analysis of case study 9, which is a project for construction works associated with replacement of existing AC sewer lines at Abu Dhabi Island – Category – A.

## **7.6 Case Study 9 (Project O-1463)**

This case study is a project to construct the replacement of existing sewer lines and a quick repair at Abu Dhabi Island – Category A. The project was awarded to a local contractor (Lindenberg Emirates LLC). The overall cost of the project was AED 116,026,699. The construction phase of the contract was 24 months in duration. This case study was selected based on the cost and schedule index and categorised as one of the low performing projects. Data were collected using two instruments (semi-structured interviews and supporting documents). A lengthy semi-structured interview was conducted with the client project manager whose contact detail was obtained from the progress meetings reports. Two more, short duration, semi-structured interviews were carried out with the assigned consultant and contractor project managers. Their contact details were also obtained from the progress meeting reports. Table 7.32 includes general information about the project, interviews, and interviewees as well as the research method.

**Table 7.32: Case General Information (Project O-1463)**

Project	Client	Consultant	Contractor	Project Value
Construction Works Associated With Replacement Of Existing Sewer Lines At Abu Dhabi Island – Category – A	ADSSC	Dorsch Gruppe (DC)	Lindenberg Emirates LLC	AED 116,026,699
Project Start Date	Project End Date	Methodology	Collection Method	Instruments
13 June, 2010	31 July, 2013	Case Study	Supporting Document and Interviews	Semi-structured, open-ended, direct/indirect, formal supporting document
Interviewees	Role in Project	Interview Type	Interview Duration	Location
Client Project Manager, C9-CL-IN1	Project Manager (Client)	Semi-structured	35 min	ADSSC Headquarter
Consultant Project Manager, C9-CL-IN2	Project Manager (Consultant)	Semi-structured	10 min	Phone
Contractor Project Manager, C9-CL-IN3	Project Manager (Contractor)	Semi-structured	15 min	Phone

### 7.6.1 Project Overview

This project was to construct the replacement of existing sewer lines and a quick repair at Abu Dhabi Island – Category A. The work was awarded to Lindenberg in 2010 and due to be completed on 12 December 2012. The original contract budget was AED 116,026,699. This project was awarded to Dorsch due to their long experience in this field of works.

The project's scope of works was:

- Replacement of existing sewer pipelines and associated structures
- Rehabilitation of existing gravity sewer lines and manholes, including over pumping
- Reinstatement of the surfaces and/or any existing components/services disturbed or damaged as result of the construction and/or maintenance of the project.



- Cleaning and inspection survey of existing gravity sewers, including associated structures.
- Locating manholes and removal of overburden if necessary.
- Cleaning of manholes by water jetting, and/or wire brushing or other approved means
- Removal of any sand and debris jetted or dredged from the sewers and disposal of these materials to an approved tip
- Control of odour and nuisance during activities
- Dealing with sewer flow during activities

Inspection survey:

- CCTV survey of sewer lines and visual inspection as specified, in various locations in Abu Dhabi Island and as directed by the Engineer
- Profiling of pipe cross section and measurement of deflection as specified
- Deflection survey for GRP pipelines
- Inspection survey of Manholes as specified
- Production of inspection survey records as specified
- Quick repairs of sewer lines found to be defective in various locations in Abu Dhabi island and as directed by the Engineer
- Disposal and abandonment of existing sewer lines and associated structures
- Removal and disposal of existing asbestos cement pipes in accordance with the specifications and the Emirate of Abu Dhabi laws and regulations.
- Any other work related to the above works in any location in Abu Dhabi Island area which may be instructed throughout the duration of the contract (W21, W22, W15/02 and ADU campus).
- The provision of labour, materials, plant, equipment, instruments etc. required for the works.
- The testing and commissioning of works.
- The maintenance of the works for a period of 365 days.

Due to the factors related to planning ability and late contractor involvement, the progress might have been influenced. For example, after the construction period elapsed by 52 days (9.62%),

there was no site progress as the contractor was late in making the submittals necessary in advance of site works proceeding. A letter of assistance was issued by ADSSC to help them in gaining support from other authorities with permits and approvals.

When the construction period had elapsed 136 days (25%), program progress was 11.9% and actual progress was 7.5%. According to the official progress meeting reports, this gap was due to the delay in getting approvals from the authorities for setting up dewatering discharge points, asphalt cutting, and removal of soft landscaping. Furthermore, up to that time, there was a delay in the appointment of the project manager, one of the key personnel. This could be related to weakness in resource planning.

Due to the factors related to team motivation, team efficacy/potency, performance-based incentive mechanism, and late contractor involvement, the progress might have been influenced. For example, after 241 days (44%), program progress was 34.94% and actual progress was 12.56%. ADSSC and Dorsch Gruppe (DC) expressed concern about the slow progress shown in respect to site activities, replacement of existing sewer networks, new pipeline and manhole construction, cleaning and inspection survey. The delay percentages were reaching critical levels. A two-week look ahead schedule and progress summary was requested to improve the progress with special consideration to the NDM works and construction of manholes.

Due to the factors related to unavailability of specialist members, individual experience, planning intention, implementation of innovative ideas, and rational behaviour and cooperation, the progress might have been influenced. For example, at 381 days (69.5%), program progress was 49.04% and actual progress was 32.71%. The actual progress achieved on site was 35.71%, considering the additional quantity of NDM works carried out with reference to the approved construction schedule and contract drawings; accordingly the variance was reduced to 5.69%. However, no progress was made on the submission of the CCTV inspection survey report, which was believed to be due to the absence of competent/specialist personnel of the subcontractor (M/S Hurtec) to understand clearly the requirements of ADSSC GIS section. Furthermore, DC implementation of an organization hierarchy for effective site supervision might be lacking with the current staffing pattern. Additionally, after 528 days, program progress was 95.86%. The contractor submitted a modified document (narrative report) requesting an extension of time.

With 633 days of the construction period having elapsed (115%), program progress was 100% and actual progress was 66.6%. A large contributor to the delay during this period could be the objections from residents in area w13/0. The reason for these complaints was that the contractor was not implementing the HSE standard. This bad implementation was also confirmed when the Regulation and Supervision Bureau (RSB) made unannounced visits to the site after which a letter of warning was issued. Furthermore, after the construction period had elapsed by 759 days (100.13%), program progress was 100% and actual progress was 85.1%. The delay in completion of CCTV works due to unavailability of permits from concerned authorities could be a contributing factor to the delay in progress

After 787 days (103.8%), program progress was 100% and actual progress was 87%. The revised program for the extension of time was approved and the contractor was asked to ensure there was no lack of attendance from their site supervisory staff for the on-going activities in order to complete the work according to the new revised program. This could be related to team motivation, team efficacy/potency, rational behaviour and cooperation, and goal commitment to be discussed in the next section.

At 815 days (107.51%), program progress was 100% and actual progress was 90.10%. This delay in handing over for inspection was due to the fact that only 35% of the network was handed over to the Maintenance and Operation Division out of more than 95% of the completed networks. When the construction period had elapsed by 857 days (113.6%), program progress was 100% and actual progress was 92.9%. Additional works for Abu Dhabi University was added to the scope of works as a variation order. As documented in the progress meeting reports, after 955 days (125.99%), program progress was 100% and actual progress was 94.3%. The contractor was asked to submit a revised program for the remaining works of the original scope, which was to be completed on or before 28 February 2013, and the Abu Dhabi University campus completion was to be no later than 31 May 2013.

At 1025 days (94.6%), program progress was 98.2% and actual progress was 95.10%. A new HSE officer was proposed and approved in order to improve the HSE and prevent any safety violations. Additionally, a new engineer was proposed and approved as acting project manager. After 1123 days (104.6%), program progress was 100% and actual progress was 99.34%. The contractor was

asked to finalize the snag list and remaining work to be completed. The snag list items and remaining work were completed on 31 July 2013 and the project was handed over to the client. This project is considered among the low performing projects due the intangible resources factors discussed in the next section.

### **7.6.2 Findings and Discussion**

The findings of this case provided an explanation to research questions 1, 2, and 4 of the study and validated three themes leading to the project's success. The researcher discussed the research evidence comprising the influencing factor and quotes from the case study research, and the theme related to human, organizational, and social capital categories were presented as the following:

#### ***7.6.2.1 Human Capital/Study Objective 2/ Research Question 1***

The discussion in this section confirmed one human capital intangible resources theme. The implementation intention (Theme 9) was validated. The findings provided more explanation to research question 1 of the study. The researcher discussed the research evidence comprising the themes as below:

##### **A. Implementation Intention (Theme 9)**

Appendix 2 contains the case study transcript along with interviews questions used. Table 7.33 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the implementation intention theme for further discussion.

**Table 7.33: Final Coding for Implementation Intention**

Final coding framework	Initial coding framework	
Implementation Intention	<ul style="list-style-type: none"> <li>• Unsuccessful project</li> <li>• resource planning is perceived to be weak is perceived to be weak</li> <li>• Planning ability is perceived to be weak</li> <li>• planning intention</li> <li>• implementation mind-set</li> <li>• management support is perceived to be weak</li> </ul>	<ul style="list-style-type: none"> <li>• communication is perceived to be weak</li> <li>• innovation and creative solutions are perceived to be weak</li> <li>• industry specific experience is perceived to be weak</li> <li>• implementation of innovative ideas is perceived to be weak</li> <li>• Problem solving ability is perceived to be weak</li> </ul>

While attempting to confirm one of the human intangible factors influencing project success, the researcher asked the three interviewees about the planning ability factor and its influence on success of the project. The interviewees stated:

- *It is just bad planning and no good control over the subcon.* (Client Project Manager, C9-CL-IN1)
- *They were not able to follow the plan and they did not do risk planning.* (Consultant Project Manager, C9-CL-IN2)
- *The subcontractor was not following the schedule we gave them which in turn affected our performance.* (Contractor Project Manager, C9-CL-IN3)

The above statements show linking points and useful explanations to answer research question 1 and confirm theme 9. These linking points are between the problem solving and planning. This link directed to the topic of “implementation intention” that emerged in the previous cross-case chapter. This case delivered additional data presenting that because of the weak planning by the given contractor, the problem with weak subcontractor, providing the required submittals, and estimating the risk were completely overwhelmed and the project was not accomplished as stated below:

- *These submittals are critical as no site work can be carried out without them. The contractor was late to make the submittals and therefore the project got delayed.* (Client Project Manager, C9-CL-IN1)

- *Not good problem solving skill. It took them time to come up with effective alternative options.* (Client Project Manager, C9-CL-IN1)

Evidence also shows indication of bad communication planning as stated below:

- *Lack of communication which made them loose time unnecessary.* (Consultant Project Manager, C9-CL-IN2)

Evidence also shows that due to the perceived weak industry-specific experience, proper planning for recruiting and assigning an experienced project leader was not achieved:

- *There were late in providing alternative PM for the project. They have proposed a PM that was approved but did not join. PM is a key position in the project and for sure it affected the project outcome.* (Client Project Manager, C9-CL-IN1)

As argued in case 6, one of the project team leader's main roles is resource planning to ensure there is adequate manpower throughout the projects. Proper planning ensures there are adequate resources for the project to minimise delays which might affect the performance and success of the project. There is an indication from the arguments presented in Section 6.2.4 in the cross-case chapter that the implementation intentions can influence the plan development of the project (Gollwitzer and Schaal, 1998; Osburn and Mumford, 2006). The implementation intentions can influence the plan development of the project especially if there is focus towards the practical issues of how, when, and where the plan has to be implemented to attain its objectives. To mitigate the influence of the implementation intentions on the plan development of the project, it is better to focus on analysing the feasibility of the plan. In this case, there is an indication that the implementation intention is weak as stated below:

- *The subcontractor was not following the schedule we gave them which in turn affected our performance unfortunately.* (Contractor Project Manager, C9-CL-IN3)
- *Despite working for a governmental project and the letter of assistance they got, there were not able to build a good relation with authorities to gain support when issues come up. These permits and approval certainly delayed the project.* (Client Project Manager, C9-CL-IN1)
- *Resource planning was weak or it could be financially so they save money.* (Consultant Project Manager, C9-CL-IN2)

The main focus of implementing a project is the outcome and not necessarily the plan of implementation, and the emerging problems (Koole and van't Spijker, 2000). The findings in this case answer research question 1 as well as confirm theme 9 and the findings of Caughron and Mumford (2008) that study participants with implementation intentions will generate more creative solutions than participants without. The response from the interviews in Table 7.3.4 includes three additional statements from three independent sources which supports the notion that having implementation intention is important to the success of a project. This answer along with previous data taken from table 6.5 of the cross-case chapter and case study 6 are now strong enough to stand on their own and therefore do not require more validation.

**Table 7.34: Statements supporting the importance of Implementation intention**

Theme 9	Supporting Statement
Implementation intention	<i>ADSSC/DC displayed their concern that no action [and intention] has been taken yet with regards to the solution promised by the contractor to solve the sudden reduction of manpower issue. (Case 3-Progress Meeting 28)</i>
	<i>It is basically lack of good planning and experience. They were too late [no intention] to provide these submittals which contributed to project delay. (Client Project Manager, C6-CL-IN1)</i>
	<i>Despite working for a governmental project and the letter of assistance they got, there were not able to build a good relation with authorities to gain support when issues come up. These permits and approval certainly delayed the project. (Client Project Manager, C9-CL-IN1)</i>
	<i>The subcontractor was not following the schedule we gave them which in turn affected our performance unfortunately. (Contractor Project Manager, C9-CL-IN3)</i>
	<i>Resource planning was weak or it could be financially so they save money. (Consultant Project Manager, C9-CL-IN2)</i>

#### **7.6.2.2 Organization Capital/Study Objective 2/ Research Question 2**

The discussion of this section revealed confirmation on one theme which is the motivation misalignment (Theme 5). The findings provide additional statements to provide explanations to research question 2 of the study. The researcher discussed the research evidence comprising the theme as below:

**C. Motivation Misalignment - (Theme 5)**

Appendix 2 contains the case study transcript along with interviews questions used.

Table 7.35 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the motivation misalignment theme for further discussion.

**Table 7.35: Final Coding for Motivation Misalignment**

Final coding framework	Initial coding framework	
Motivation Misalignment	<ul style="list-style-type: none"><li>• learning ability is perceived to be weak</li><li>• Team is perceived not motivated</li><li>• team efficacy/potency is perceived to be weak</li><li>• rational behaviour and cooperation are perceived to be weak</li><li>• performance-based incentive mechanism unavailable</li><li>• above business-as-usual not achieved</li><li>• unjust risk allocation</li><li>• No procurement approaches to promote motivation</li></ul>	<ul style="list-style-type: none"><li>• Problem solving ability is perceived to be weak</li><li>• Unsuccessful project</li><li>• management support is perceived to be weak</li><li>• Inequitable risk profile</li><li>• Late contractor involvement</li><li>• Inconsistency between the project performance goals and incentive goals</li><li>• Unfair and inflexible incentive performance</li><li>• measurement processes</li><li>• Inadequate price negotiation</li><li>• Interactional justice and reciprocity</li><li>• No performance-enhancing initiatives</li><li>• Goal commitment</li></ul>

Whilst trying to confirm one of the human intangible factors found that influenced project success, the researcher asked two of the interviewees about presence of team motivation and its influence on the success of the project. The interviewees stated:

- *Not good problem solving skill. It took them time to come up with effective alternative options.* (Client Project Manager, C9-CL-IN1)
- *Their problem solving skill was weak as they were not motivated.* (Consultant Project Manager, C9-CL-IN2)



Lack of team motivation might have affected the team's problem solving and ability to learn and handle project work orders without a delay. The claim by the interviewee was confirmed from the following statements made in the progress meeting reports:

- *ADSSC expressed dissatisfaction on the current rate of progress achieved by the contractor with the available /engaged resources under this contract. (Case 9 Progress Meeting 20)*
- *DC asked LWD to explore alternative options to complete remaining cleaning and inspection survey in blue sectors (E40, E42 and W59/02) as per the existing condition of the sewer network. (Case 9 Progress Meeting 43)*

The arguments presented in Case study 3 suggest that projects teams that have the capability to come up with solutions deal might have a better chance of solving operational and technical problems effectively and efficiently. The problem-solving process is highly dependent on how motivated the project team is. In this case, the analysis showed the influence of motivational misalignment on the accomplishment of business-as-usual (BAU) objectives informed by motivational theory literature. As argued in case 3, the case indicate when the participants motivation is not properly aligned it can led to the failure of the project. The findings also indicate motivating team members towards BAU goals might be affected by certain aspects of the procurement approach. In this case, the motivation of the contractor might have been affected by a desire to do what is right and not necessarily by the desire to maximize income and mitigate the risks in the project (Rose and Manley, 2010). The main proposition of the findings in this case is to encourage the client to consider the possible effect of psychological motives in projecting financial incentives within the procurement strategy. Motivational theories can be used to predict the behaviour of the contractor and the consultant, even though there is room for the individual nature within the theories. The interview response in Table 7.3.6 shows an additional supported statement, while the data taken from Table 6.6 of the cross-case chapter is not enough to stand on their own and requires more validation in the following case:

**Table 7.36: Statement supporting the importance of Motivation Misalignment**

Theme 6	Supporting Statement
Motivation Misalignment	<i>Giving incentive [aligning an objective with motivation] to the team to learn could have improved their learning as they will be more motivated to solve problems and issue. (Contractor PM, C3-CL-IN3)</i>
	<i>Our team was motivated throughout the project and we give appreciation letters and incentives [aligning an objective with motivation]. (Contractor PM, C2-CL-IN3)</i>
	<i>Their problem solving skill was weak as they were not motivated. (Consultant Project Manager, C9-CL-IN2)</i>

#### **7.6.2.3 Social Capital/Study Objective 2/ Research Question 4**

The discussion in this section revealed confirmation on one theme which is knowledge sharing (Theme 7). The findings provide additional statements to provide an explanation to research question 3 of the study. The researcher discussed the research evidence comprising the theme as below:

##### **B. Knowledge Sharing - (Theme 7)**

Appendix 2 contains the case study transcript along with interviews questions used. Table 7.37 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the knowledge sharing theme for further discussion.

**Table 7.37: Final Coding for Knowledge Sharing**

Final coding framework		Initial coding framework
Knowledge Sharing	<ul style="list-style-type: none"> <li>• team learning ability is perceived to be weak</li> <li>• team efficacy/potency is perceived to be weak</li> <li>• Know-How</li> <li>• Explicit knowledge</li> <li>• Tacit knowledge</li> <li>• Embedded knowledge</li> <li>• information, skills, and expertise</li> <li>• exchange knowledge</li> <li>• sustaining competitive advantages</li> <li>• knowledge management systems</li> <li>• team tend to resist sharing their knowledge</li> <li>• knowledge is valuable</li> </ul>	<ul style="list-style-type: none"> <li>• Problem solving ability is perceived to be weak</li> <li>• team environment is perceived to be weak</li> <li>• Team is perceived not to have specialist members</li> <li>• Individual experience is perceived to be weak</li> <li>• Weak database</li> <li>• Communication is perceived to be weak</li> <li>• Relationship is perceived to be weak</li> <li>• Team members connection is perceived to be weak</li> <li>• Unsuccessful project</li> <li>• knowledge is property</li> <li>• no incentive for sharing information</li> </ul>

The researcher was trying to find an explanation to research question 4 on how social capital intangible resources influence project success, based on the statement made on the progress meeting reports:

- *ADSSC/DC expressed total dissatisfaction regarding the misbehaviour of LWD's HSE manager during the meeting. DC will issue official letter in this regard. (Case 9-Progress Meeting 42)*

Therefore, the researcher asked the three interviewees how the connection aspect between team members influenced the overall outcome of the project. Answers for this question explained that one of the factors negatively affecting the project was weak social relationships among the team:

- *He lacks the communication and relationship skills which I believe affected his outcome as an HSE manager. They were not able to meeting the HSE standard resulting to public inconvenience and compliance. (Client PM, C9-CL-IN1)*

- *HSE manager and the team were weak and made an effect on the HSE. (Consultant PM, C9-CL-IN2)*
- *I think there was a misunderstanding during the meeting. (Contractor PM, C9-CL-IN3)*

Following the argument presented in case 3, the interactions between the team members are referred to as social capital which is useful in the creating, sharing, and managing the knowledge within an organization. Social capital also helps in resolving conflict, speeding up the learning process, and integrating tacit knowledge. The lack of social capital means the project team might not have been able to communicate to share knowledge and experience across the project. In this case, the contractor was unable to meet the HSE standards. The contractor's failures lead to public inconvenience and lack of compliance. Although the team obtained the permits faster and knew the clients requirements for the submission might have not resulted in the development of competencies by sharing the knowledge and experience across the project:

- *The process to follow is lengthy and complicated. Governmental companies should have a better system to work on these approvals. (Contractor PM, C9-CL-IN3)*
- *These submittals are critical as no site work can be carried out without them. The contractor was late to make the submittals and therefore the project got delayed. (Client PM, C9-CL-IN1)*
- *They were not able to meeting the HSE standard resulting to public inconvenience and compliance. (Client PM, C9-CL-IN1)*

Additionally, due to the weak social relationships, the team's general collective conviction that together they can be effective might be lacking, as no improvement in meeting the scope and time was observed, as is shown in the following progress meeting report:

- *DC notified LWD regarding the penalty to be applied, in the future payments as the revised contract completion period is already elapsed. (Case 9-Progress Meeting 47)*

In this case, it is also evident that professional knowledge and expertise among the team members was not sufficient for the successful implementation of the project. According to Hong et al. (2008), there might be a strong correlation between the team members' knowledge base and their ability to communicate effectively. Deeter-Schmelz and Ramsey (2003) also indicate sharing information among team members might contribute to improving individual and team

performance in the project. It is however important to realise that every project has extraneous circumstances that can influence the team's performance (Wang and Ko, 2012):

- *ADSSC/DC expressed total dissatisfaction regarding the misbehaviour of LWD's HSE manager during the meeting. DC will issue official letter in this regard. (Case 9-Progress Meeting 42)*
- *ADSSC expressed dissatisfaction on the current rate of progress achieved by the contractor with the available /engaged resources under this contract. (Case 9-Progress Meeting 20)*

As argued in case 3, according to Wang and Ko (2012, p. 423), the emergence of extraneous circumstance might occur when knowledge sharing within the team is not optimal. For instance, lower efficiency in task management, increase number of failures, and delays in the deliverables as stated below:

- *Point of Concern: ADSS expressed concern over the apparent limited progress shown to date in respect of submittals that are necessary in advance of site works proceeding. (Case 9-Progress Meeting 3)*
- *ADSSC expressed concern about the slow progress shown to date in respect of site activities, submittals, appointment of key personnel etc. (Case 9-Progress Meeting 9)*
- *Point of Concern: DC expressed their dissatisfaction in lack of providing accurate and reliable information about the length of FOC interfacing with LWD's scope of work. LWD stated that the as built information provided but IGCS has been changed and agreed to provide the required for further necessary action with ADSSC. (Case 9-Progress Meeting 17)*

As argued in case 3, Hsu et al. (2007) posit teams with open lines of communication, and an environment that foster information sharing mitigate project risks better, and successfully implement projects. The growth of the team is dependent of the team willingness to learn from each project (Ochieng and Price, 2010). Learning occurs from tacit knowledge and from sharing experiences from previous projects (Goffin and Koners, 2011; Sharp et al. 2003). Sharing minimizes the duplication of work, and ensures accrued knowledge can be applied in crossways in other projects (Sharp et al., 2003). The shared experience can be archived (Newell et al, 2006), or shared in post-project evaluations (Goffin and Koners, 2011). Tacit knowledge is developed as employees deal with the budgetary, product specification, and time constraints during the project (Goffin and

Koners, 2010) Unfortunately, the real benefits of tacit knowledge are acknowledged towards the end of the project. In this case, the benefits of the project improvement process were integrated into the social construct of the project through internal controls as stated below:

- *This control has improved the HSE in the sites and somehow improved the progress rate.*  
(Client PM, C9-CL-IN1)
- *This action would have been good if they implemented it from the start and we could have avoided many public complains.* (Consultant PM, C9-CL-IN2)
- *We managed to put things in control when we implemented this.* (Contractor PM, C9-CL-IN3)

Therefore, based on this case finding, theme 7 was confirmed. The responses from the interviews in Table 7.38 shows one additional statement coming from one single source supporting knowledge sharing theme for project success. This answer along with previous data taken from table 6.5 of the cross-case chapter and case study 6 are still not strong enough and still ambiguous to stand on their own and therefore require further validation and confirmation.

**Table 7.38: Statement supporting the importance of Knowledge Sharing**

Theme 7	Supporting Statement
Knowledge Sharing	<i>It was felt that the connection between the members was not so good and that made a tense environment [to share knowledge] which indirectly effected the project progress.</i> (Consultant PM, C3-CL-IN2)
	<i>He lacks the communication and relationship skills which I believe affected his outcome as an HSE manager. They were not able to meeting the HSE standard resulting to public inconvenience and compliance.</i> (Client PM, C9-CL-IN1)

### 7.6.3 Summary of Findings for the Case

The analysis of this case confirmed the implementation intention (theme 9), motivation misalignment (Theme 6), and knowledge sharing (Theme 7). The responses from the interviews show three additional statements coming from three different sources supporting the implementation intention theme for project success. This answer along with previous data taken from the cross-case chapter and case study 6 are now strong enough to stand on their own to

validate the theme. However, the answer from the interviews shows one additional statement coming from one source supporting the importance of motivation misalignment for project success. This answer along with previous data taken from the cross-case chapter is still not strong enough to stand on their own and therefore require more validation in the following case. Similarly, the responses from the interviews show one additional statement coming from one single source supporting the knowledge sharing theme for project success. This answer along with previous data taken from the cross-case chapter and case study 6 are still not strong enough and ambiguous to stand on their own and therefore require further validation and confirmation in the following case. The next section is the analysis of case study 10, which is a project for Hameem Development – Zonescorp Construction of Sewerage Network and Pumping Station.

### **7.7 Case Study 10 (Project O-1673)**

This case study is Hameem Development – Zonescorp Construction of Sewerage Network and Pumping Station. The project was awarded to a local contractor (ADMAC). The overall cost of the project was AED 92,100,000.00. The construction phase of the contract was 24 months in duration. This case study was selected based on the cost and schedule index and categorised as one of the high performing projects. Data were collected using two instruments (semi-structured interviews and supporting documents). A lengthy semi-structured interview was conducted with the client project manager whose contact detail was obtained from the progress meetings reports. Two more, short duration, semi-structured interviews were carried out with the assigned consultant and contractor project managers. Their contact details were also obtained from the progress meeting reports. Table 7.39 includes general information about the project, interviews, and interviewees as well as the research method.

**Table 7.39: Case General Information (Project O-1673)**

Project	Client	Consultant	Contractor	Project Value
Hameem Development – Zonescorp Construction of Sewerage Network and Pumping Station	ADSSC	Hyder Consulting Middle East	ADMAC	AED 92,100,000.00
Project Start Date	Project End Date	Methodology	Collection Method	Instruments
13 April, 2010	30 June, 2012	Case Study	Supporting Document and Interviews	Semi-structured, open-ended, direct/indirect, formal supporting document
Interviewees	Role in Project	Interview Type	Interview Duration	Location
Client Project Manager, C10-CL-IN1	Project Manager (Client)	Semi-structured	25 min	ADSSC Headquarter
Consultant Project Manager, C10-CL-IN2	Project Manager (Consultant)	Semi-structured	20 min	ADSSC Headquarter
Contractor Project Manager, C10-CL-IN3	Project Manager (Contractor)	Semi-structured	13 min	Phone

**7.7.1 Project Overview**

Hyder Consulting Middle East was appointed by ADSSC to provide consultancy services for the design and construction supervision of sewerage schemes for future development works in Abu Dhabi Emirates – part 2 under contract O-1248. One of these future development projects is “Hameem Development – Zonescorp: Construction of sewerage network and pumping stations”.

The scope of the work included the design and construction supervision of new gravity sewers, rising main, and a pumping station disposing of the sewage generated by Hameem Workers’ residential city.

**Gravity System**

The gravity sewer comprises sections of 800 mm and 1000 mm diameter pipes approximately 5 km in length between Hameem and a proposed pumping station, together with a section 1000 mm diameter and approximately 1.6 km in length between the rising main discharge chamber and existing manhole MH TS72 in the industrial city of Abu Dhabi (ICAD) trunk sewer.



The upstream sewer section had been sized to cater for the projected peak of flow of 293 L/s arising from the Hameem Workers' residential city with additional spare capacity to accommodate possible future developments in the area. The downstream section was designed to accommodate a peak flow of 534 L/s to allow other future developments to be intercepted in accordance with ADSSC requirements. The estimated construction cost of the gravity system was AED 76,000,000.00.

### **Pumping Station and Rising Main**

The pumping station will pump the flows to a discharge chamber connecting to the downstream length of gravity sewer. The industrial effluent treatment plant (IETP) will accept 25,000 cubic metres per day, as per an agreement between ADSSC and Zones Corp. Therefore, the pumping station and rising main have been designed in such a manner that they could convey the peak flow of 534 L/s. The work included:

- A pumping station with 4 pumps (duty/assist/assist + standby)
- 7.8 km of 700 mm diameter rising main between the proposed pumping station and a discharge chamber, including surge protection vessels, isolation valves, flow meter and thrust blocks.
- A discharge chamber, approximately 1.6 km upstream of the IETP to allow a diversion of the route in phase two of the project.

The construction cost of the rising main was AED 21,000,000.00.

Due to the factors related to procurement approaches to promote motivation, late contractor involvement, exchange knowledge, sharing knowledge, communication, specialist members Penalty, inadequate price negotiation, and inconsistency between the project performance goals and incentive goals, the progress might have been influenced. For example, according to the official progress meeting reports, up to the first week of May 2010, M/S ADMAC had not submitted any of the working shop drawings. These shop drawings were necessary, as no construction was allowed until shop drawings were approved. The shop drawings should include the site conditions and the existing services, which were exposed by executing trial holes. Shop drawing preparation procedure was discussed separately due to its importance. However, the contractor submitted the organization chart. The project manager, safety officer, and QC/QA

engineer had been interviewed and found acceptable. Furthermore, in the first week of June 2010, the contractor pointed out a claim for time and cost (due to the delay in receiving approval of the submitted materials and method statements) as well as the inability to achieve the project within the remaining period (10 months). With regard to cancellation of the tanker outfall in Sector Z 29 and tanker discharge facility, which reduced the contract value by approximately 10 million (UAE Dirham), Hyder/ADSSC confirmed the cancellation and advised another tanker in the design stage to replace the cancelled one and keep the contract value the same. Additionally, by the first week of July 2010, the overall status was 12.33% behind program and 20.89% behind time. The proposed QC/QA Engineer was still not available so ADMAC had to deploy the Head of QA/QC as cover until an individual was appointed and requested temporary approval of their proposed and rejected QA/QA Engineer, working under the project manager until a permanent QA/QC Engineer could be approved.

With elapsed time of 65%, the contractor made a good attempt on the way to achieve better progress and reduce the expected delay. With elapsed time of 82%, the program was 91.26%. Although the actual progress of the contract was slightly improved during December 2010, it remained behind the required rate of progress necessary to meet the contract completion date. It is noted through progress meeting report records that the latest progress figures showed a mere 1.5% (average) per week. By continuing with this rate of progress, it would take another year to complete this project. Part of the reasons behind the noted poor progress might be due to the lack of project manager for more than two months, as well as the QA/QC Engineer and the stoppage of NDM works for more than three weeks. This could be related to knowledge, skills, and expertise.

ADMAC submitted a program to complete the contract works by mid-February 2012, which was rejected by the client. This was because it was contrary to ADMAC's previous promises and what they mentioned at the previous meeting concerning their intention to take whatever steps required to expedite the completion and ensure earliest completion of the works. ADMAC agreed to revise the program to make the completion date the end of October 2011. This could be related to knowledge, skills, and expertise, and performance-based incentive mechanism as discussed in the next section.

With elapsed time of 166%, the program was 98.37%, constructed (financial) was 86.90%, and behind the program by 11.47%, and finance (payment to date) was 76.32%. The construction completion date was expected to be end of December 2011; however, it was extended to March 2012 due to the long delivery period of the pumping station odour control unit, overhead crane and the additional requirements from ADDC concerning the substation building. With elapsed time of 178%, program was 100.00%, constructed (financial) was 93.66%, and behind the program by 6.34%, and finance (payment to date) was 81.29%. The construction completion date was planned for the end of December 2011 but was extended to March 2012 due to the late delivery of the pumping station overhead crane and the additional requirements from ADDC concerning the substation building. M and E works were still either delayed or not commenced due to non-completion of civil works as well as the non-delivery of the overhead crane, jet pumps, potable water system, and fire alarm system. The maintenance and operation manual were submitted on 8 January 2012 and testing and commissioning procedures were under review. ADMAC was requested to coordinate the suppliers of M and E equipment in order to finish the visual inspection on 31 January 2012. The actual completion date for the project was 30 June 2012, in accordance with the PAC date. The final account for the project was around AED 92,100,000.00.

### **7.7.2 Findings and Discussion**

The discussion of this section provides explanations to research questions 2 and 4 of the study and validated two themes leading to the project's success. The researcher discussed the research evidence comprising the influencing factor and quotes from the case study research, and the theme related to organizational and social capital categories were presented as the following:

#### **A. Motivation Misalignment - (*Theme 5*)**

Appendix 2 contains the case study transcript along with interviews questions used. Table 7.40 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the motivation misalignment theme for further discussion.

**Table 7.40: Final Coding for Motivation Misalignment**

Final coding framework	Initial coding framework	
Motivation Misalignment	<ul style="list-style-type: none"> <li>• Penalty</li> <li>• Team is perceived not motivated</li> <li>• team efficacy/potency is perceived to be weak</li> <li>• performance-based incentive mechanism unavailable</li> <li>• above business-as-usual not achieved</li> <li>• No procurement approaches to promote motivation</li> <li>• Interactional justice and reciprocity</li> <li>• No performance-enhancing initiatives</li> <li>• Goal commitment</li> </ul>	<ul style="list-style-type: none"> <li>• Problem solving ability is perceived to be weak</li> <li>• management support is perceived to be weak</li> <li>• Inequitable risk profile</li> <li>• Late contractor involvement</li> <li>• Inconsistency between the project performance goals and incentive goals</li> <li>• Unfair and inflexible incentive performance measurement processes</li> <li>• Inadequate price negotiation</li> </ul>

Whilst trying to confirm one of the human intangible factors found that influenced project success, the researcher asked two of the interviewees about presence of team motivation and its influence on the success of the project. The interviewees stated:

- *Team did not seem to be motivated. Maybe at the start but later they lost the momentum. I believe this also contributed to the delay.* (Client Project Manager, C10-CL-IN1)
- *Lack of motivation towards the mid of the project was obvious as they progress rate was slow.* (Consultant Project Manager, C10-CL-IN2)
- *Well. Motivation is important of course and due to the unavailability of PM they team may got de-motivated as they needed a leader to keep on motivating them.* (Contractor Project Manager, C10-CL-IN3)

Lack of team motivation towards the middle of the project duration might have affected the team's problem solving and ability to learn and handle project work orders without delay. The claim by the interviewee was confirmed from the following statements made in the progress meeting reports:

- *ADSSC expressed concern over the Contractor poor progress of works and instructed them to manage the resources and adopt every effort to recover the delay.* (Case 10-Progress Meeting 20)

According to the findings in Case study 3, the timing and quality of the implemented project might be dependent on the project team's ability to develop effective solutions to the operational and technical problems effectively. The effectiveness of the team to develop solutions is influenced by the team motivation level. The correct alignment of motivation positively impacts the attainment of the company's daily operational goals. In this case the motivation and project performance were misaligned, while motivation towards the above BAU goals was critically impacted by specific aspects of the procurement approach that were not appropriate under the project settings. The findings indicate the project contractor was motivated by justice and a reciprocity shaping the perception of a financial incentive system, and not simply to mitigate the risks and maximize the revenues (Rose and Manley, 2010):

- *It got the project to be delayed. They could not find replacement and they paid penalty for that. (Consultant Project Manager, C10-CL-IN2)*
- *ADMAC still to submit replacement for PM – deduction incorporated in interim payments. The progress still far from the required rate of progress necessary to achieve completion of the works within the shortest possible period. The average progress figures show 2% per week. This is unacceptable especially in this stage of the contract period. More improvement is required from the contractor. Hyder's letter ref. 1113 dated 3/2/2011, concerning this subject has been issued to ADSSC, and also Hyder's letter ref. 1108 dated 3/2/2011, concerning the same subject has been issued to the contractor. Despite ADMAC confirmed last meeting that the scope of works will be completed on August, it looks that the work will not be completed before end of year 2011. (Case 10-Progress Meeting 22)*
- *Motivation is important of course and due to the unavailability of PM they team may got de-motivated as they needed a leader to keep on motivating them. (Contractor Project Manager, C10-CL-IN3)*

Therefore, the main suggestion of this claim is that project clients should consider the potential effect of the psychological motives and their effects on actions in planning financial incentives as portion of a complete procurement strategy. Contractor and consultant team motivation in a built environment context can be predicted by using principles of motivation theories even though there is an individual nature of psychological motivation theories. The replies from the interviews in Table 7.41 show two statements coming from two different sources, if combined, supporting

the importance of motivation misalignment for project success. This answer along with previous data taken from table 6.6 of the cross-case chapter and case study 9 are now strong enough to stand on their own and therefore do not require more validation as three sources of data was achieved.

**Table 7.41: Statement supporting the importance of Motivation Misalignment**

Theme 6	Supporting Statement
Motivation Misalignment	<i>Giving incentive [aligning an objective with motivation] to the team to learn could have improved their learning as they will be more motivated to solve problems and issue. (Contractor PM, C3-CL-IN3)</i>
	<i>Our team was motivated throughout the project and we give appreciation letters and incentives [aligning an objective with motivation]. (Contractor PM, C2-CL-IN3)</i>
	<i>Their problem solving skill was weak as they were not motivated. (Consultant Project Manager, C9-CL-IN2)</i>
	<i>It got the project to be delayed. They could not find replacement and they paid penalty for that. (Consultant Project Manager, C10-CL-IN2) <u>PLUS</u> Motivation is important of course and due to the unavailability of PM they team may got de-motivated as they needed a leader to keep on motivating them. (Contractor Project Manager, C10-CL-IN3)</i>

#### **7.7.2.1 Social Capital/Study Objective 2/ Research Question 4**

The analysis of this case also revealed confirmation on one theme which is the knowledge sharing (Theme 8). The findings provide additional statements to provide an explanation to research question 4 of the study. The researcher discussed the research evidence comprising the theme as below:

##### **A. Knowledge Sharing - (Theme 7)**

Appendix 2 contains the case study transcript along with interviews questions used. Table 7.42 is the result of the open coding and final coding exercises conducted to identify initial coding frameworks, categorise them and then present the knowledge sharing theme for further discussion.

**Table 7.42: Final Coding for Knowledge Sharing**

Final coding framework	Initial coding framework	
Knowledge Sharing	<ul style="list-style-type: none"> <li>• team learning ability is perceived to be strong</li> <li>• team efficacy/potency is perceived to be strong</li> <li>• Know-How</li> <li>• Explicit knowledge</li> <li>• Tacit knowledge</li> <li>• Embedded knowledge</li> <li>• information, skills, and expertise</li> <li>• exchange knowledge</li> <li>• sustaining competitive advantages</li> <li>• knowledge management systems</li> <li>• team tend to resist sharing their knowledge</li> <li>• knowledge is valuable</li> <li>• incentive for sharing information</li> </ul>	<ul style="list-style-type: none"> <li>• Problem solving ability is perceived to be strong</li> <li>• team environment is perceived to be strong</li> <li>• Team is perceived to have specialist members</li> <li>• Individual experience is perceived to be strong</li> <li>• strong database</li> <li>• Communication is perceived to be strong</li> <li>• Relationship is perceived to be strong</li> <li>• Team members connection is perceived to be strong</li> <li>• successful project</li> <li>• knowledge is property</li> </ul>

The researcher was trying to find an explanation to research question 4 on how social capital intangible resources influence project success, based on the statement made on the progress meeting reports:

- *ADSSC requested ADMAC to express their coordination with the entire concerned supplier for MandE equipment in order to finish the visual inspection on 31/1/2012. (Case 10-Progress Meeting 35)*

Therefore, the researcher asked the three interviewees how the connection aspect between team members influenced the overall outcome of the project. Answers for this question explained that one of the factors that might have passively affected the project was good social relationships among the team:

- *Connection was very good and no major issue that affected the project. (Client PM, C10-CL-IN1)*
- *No problem with connection. (Consultant PM, C10-CL-IN2)*

- *Connection between each other must be good to make the project healthy.* (Contractor PM, C10-CL-IN3)

As discussed in case 3 and 9, social capital involves the social aspects between human beings in a project. Therefore, social capital can increase the volume of creation, sharing, and management of knowledge. It helps in solving conflicts, speeding up the learning process, and integrating tacit knowledge, and because of this, the project team might have been able to communicate to share knowledge and experience across the project:

- *Communication in this project was good in fact otherwise the project may get affected more.* (Client PM, C10-CL-IN1)
- *I was happy with the level of communication during the project.* (Consultant PM, C10-CL-IN2)
- *We did not have any major miscommunication in this project. It was up to the level required and it helped the project of course.* (Contractor PM, C10-CL-IN3)

The contractor was not able to meeting the HSE standard resulting in public inconvenience and issues compliance, obtaining permits faster, and knowing the client requirements for the submittals as the team may not have been able to develop their competencies by sharing knowledge, experience, and tactics in an integrated way across the project during their timely progress meetings:

- *This project was an important project to the client so we [project team] wanted to highlight this in almost all progress meetings.* (Consultant PM, C10-CL-IN2)
- *We managed to put the project back on track through intensive and tight control".* (Contractor PM, C10-CL-IN3)

Additionally, due to good social relationships, the team's general collective conviction that together they can be effective might be good, as improvement in meeting the scope and time was observed, as is shown in the following progress meeting report:

- *There is a good attempt noticed this week on the way to achieve better progress and reduce the expected delay.* (Case 10-Progress Meeting 16)



In this case study, we can see that professional knowledge and expertise of individuals in the project team were high and it confirmed that knowledge being particularly recognised and valued in project environments is of great importance:

- *Team assigned was good. The members of the team were skilful with the right experience and the QA/QC engineer and the PM were all ok. They helped moving the project. However, towards the end of the project, PM and QA/QC engineer were not available which effected the project completion and caused expectable delay at there are other factor that made the project time to be shifted such as VO for additional work and some factors beyond their control and our control. (Client PM, C10-CL-IN1)*

As argued in case 3 and 9, the performance of a project is heavily influenced by the level of the team members' tacit knowledge and their ability to share their experiences with one another (Hong et al., 2008). The members also need to realise the correlation between individual performance and the team's performance. The performance is affected by the individual's ability to share and integrate their experiences in the current project (Deeter-Schmelz and Ramsey, 2003). The presence of unforeseeable circumstance also can impact the team's performance negatively even when the team has shared its experiences and information effectively (Wang and Ko, 2012):

- *ADMAC still to submit replacement for PM – deduction incorporated in interim payments. The progress still far from the required rate of progress necessary to achieve completion of the works within the shortest possible period. (Case 10-Progress Meeting 22)*
- *This helped initially and later it affected the project as the PM and the QA/QC left the project. (Client PM, C10-CL-IN1)*
- *Motivation is important of course and due to the unavailability of PM they team may got de-motivated as they needed a leader to keep on motivating them. (Contractor PM, C10-CL-IN3)*
- *Members were ok. It is just that some left during the project that affected it negatively. (Contractor PM, C10-CL-IN3)*

It is however important to note that unforeseeable circumstance can affect the team's ability to share the information and experiences effectively. For instance, when there is a decrease in the performance of tasks, or an increase probability for delays in implementing the project as stated below:

- *ADSSC expressed concern over the Contractor poor progress of works and instructed them to manage the resources and adopt every effort to recover the delay. (Case 10-Progress Meeting 20)*

Alternatively, Hsu et al. (2007) stated that teams which show healthier communication and knowledge sharing, will reduce uncertainties and complete projects in a better way:

- *Communication in this project was good in fact otherwise the project may get affected more. (Client PM, C10-CL-IN1)*

The team should be open to learning if it hopes to develop (Ochieng and Price, 2010). Goffin and Koners (2011) suggest that tacit knowledge and sharing previous experiences can form the basis of the learning experience within the organization. The learning process minimizes the duplication of tasks within the organization, and ensures the accrued experience is utilised in the current and future projects Sharp et al. (2003). The knowledge acquired by the team members is either documented Sharp et al. (2003) or shared in post-project evaluations (Goffin and Koners, 2011). While tacit knowledge occurs during daily operation, the information is highlighted during the progress meetings and not necessarily when the learning occurs (Goffin and Koners, 2011):

- *The progress kept on improving through good monitoring and control. (Client PM, C10-CL-IN1)*

Therefore, based on this case finding, theme 7 was confirmed. The responses from the interviews in Table 7.43 shows one additional statement coming from one single source supporting knowledge sharing theme for project success. This answer along with previous data taken from table 6.5 of the cross-case chapter and case studies 6 and 9 are now strong enough to stand on their own and therefore do not require further validation and confirmation.

**Table 7.43: Statement supporting the importance of knowledge Sharing**

Theme 7	Supporting Statement
Knowledge Sharing	<i>It was felt that the connection between the members was not so good and that made a tense environment [to share knowledge] which indirectly effected the project progress. (Consultant PM, C3-CL-IN2)</i>
	<i>He lacks the communication and relationship skills which I believe affected his outcome as an HSE manager. They were not able to meeting the HSE standard resulting to public inconvenience and compliance. (Client PM, C9-CL-IN1)</i>
	<i>Connection was very good and no major issue that affected the project. (Client PM, C10-CL-IN1).</i>
	<i>Plus: The progress kept on improving through good monitoring and control. (Client PM, C10-CL-IN1)</i>

### **7.7.3 Summary of Findings for the Case**

The analysis of this case confirmed and validates the motivation misalignment (Theme 6). The two statements coming from two different sources, when combined, can support the importance of motivation misalignment for project success. Therefore, this answer along with previous data taken from the cross-case chapter and case study 9 are now strong enough to stand on their own to validate the theme. Similarly, the responses from the interviews show one additional statement coming from one single source supporting the knowledge sharing theme for project success. This answer along with previous data taken from the cross-case chapter and case studies 6 and 9 are now strong enough to stand on their own and therefore do not require further validation and confirmation.

The responses from the interviews also show additional evidence supporting the individual experience, monitory and control strategy, and the top management support factors. There were not presented in the finding and discussion section because they have already been validated in previous cases. This evidence is included in the case study transcript at appendix 2 for future use. However, further answers in future studies may give confidence for the theme related to Leadership National Culture and be able to validate it. The confirmatory case phase was not able to validate the theme due to the limitation of the semi-structured interview questions discussed in

chapter 9. These questions were designed originally to confirm previous themes emerged in chapters 5 and 6. This has also contributed to not being able to confirm the other themes not discussed in this case study. The next section is the conclusion for the confirmatory cases phase where the evidence is presented in a comprehensive table to be used to develop the theoretical model for the study.

## **7.8 Conclusion**

In this chapter, the focus was to validate the theoretical model presented at the end of chapter 6 in order to develop an updated framework based on the identification of influencing factors to project success. The logical chain of evidence that would improve the transferability of the results beyond the single case study as explained by Miles and Huberman (1994) and Yin (2009) are presented in this chapter. The analysis of this chapter confirmed and validated the 10 themes found in the previous chapter that provided answers to research questions 1, 2, 3 and 4, where one of the themes was not validated.

The theme related to leadership technical skill was found to be an important factor that influenced the outcome for these project cases. This chapter provided more evidence and justification on why the industry-specific skill and experience of the project manager plays an important role in the project life cycle. It disconfirms the notion that project leaders need to have an understanding of technology, and do not necessarily need in-depth technical skills and knowledge because the use of team members that are subject matter experts can often be an effective technique to supply the required expertise. The responses from the interviews are strong enough to stand on their own. Similarly, Theme 10: Implementation Intention, Theme 2: Team Familiarity, Theme 3: Individual Experience and Theme 4: Organization Experience responses from the interviews are now strong enough to stand on their own. Confirmation and validation of these human category themes provided more answers for research question 1.

The theme related to top managerial support (Theme 6) was also found to be the most critical factor that influences the outcome for these project cases. This chapter provided more evidence on why top management support plays an important role in the project life cycle. The themes related to motivation misalignment (Theme 5) and monitoring and control strategy (Theme 11) have also been validated and responses from the interviews are now strong enough to stand on

their own. Confirmation and validation of these three organization category themes provided more answers to research question 2.

The knowledge sharing (Theme 7) and joint problem solving (Theme 8) responses from the interviews are also strong enough to stand on their own. These three organization category themes' validation provided more answers to research questions 3 and 4.

However, Leadership National Culture (Theme 10) was not validated in this chapter. Further answers in future studies may give confidence and be able to validate it. The confirmatory case phase might not have been able to validate the theme due to the limitation of the semi-structured interview questions discussed in chapters 3 and 9. These questions were designed originally to confirm previous themes emerged in chapters 5 and 6. Table 7.44 is a comprehensive table including related evidence so the theoretical model can be further reshaped in the next chapter. The table fully displays the evidence so other researchers can apply their own standards as well. The next chapter is the general discussion on the data analysis presented in chapters 5, 6, 7 and the compiled table of evidence.

**Table 7.44: Compiled List of Statements supporting the Themes**

Themes & Contribution	Supporting Statement	Source
<b>Theme 1:</b> Leadership industry-specific experience  (Disconfirms theories that project leaders do not necessary need to have in-depth technical skills )	<ul style="list-style-type: none"> <li>- The team leader's knowledge in ADDC [technical] specifications of DBs, transformers and electrical cables was very limited. If he was aware of these specifications, he could have acted at the early stage of the project and either suggested alternative proposal or requested materials specification changes. (Client PM, C1-CL-IN1)</li> <li>- He was technically weak and also his feedback. (Client Project Manager, C1-CL-IN1)</li> <li>- Not following the regulations. The project manager was supposed to be aware of them to avoid such thing. The project manager was not aware of all of its technical sides (Consultant's Project Manager, C6-CL-IN2)</li> <li>- The project manager was not fully aware of the regulations here. He is weak technically (Client Project Manager, C6-CL-IN1)</li> </ul>	<ul style="list-style-type: none"> <li>- Case 1 provides two statements coming from Client PM supporting the theme</li> <li>- Case 6 provides two statements coming from client PM and consultant PM supporting and validating the theme.</li> </ul>
<b>Theme 2:</b> Team Familiarity  (Confirms theories that team familiarity is an important factor associated with project success)	<ul style="list-style-type: none"> <li>- The team experience [working together] was excellent, which enabled them to execute the project successfully and smoothly. (Client Project Manager, C2-CL-IN1)</li> <li>- The team was very good and had many years of experience [working together], as the company was specialized in this type of work. (Consultant Project Manager, C2-CL-IN2)</li> <li>- Doing so many projects [together] with the same nature is actually a good hand on training. (Consultant Project Manager, C2-CL-IN2)</li> <li>- It was not so good [working together]. They used to just raise the problem and not trying to solve and that is it. For example, they will raise problem for any major or minor activities such as excavation. (Client PM, C3-CL-IN1)</li> <li>- We have been in business for long and we have dealt with all authorities as we executed many projects in the past. During these years, we built very strong relationship with authorities. (Contractor Project Manager, C8-CL-IN3)</li> <li>- The team [working together] was good in solving the problem and if it had not been solved quickly, it could have delayed the project as labors are the main driver for the activities. (Client Project Manager, C8-CL-IN1)</li> <li>- Their [the project team] planning was good and this could be noticed when making a recovery plan when the project schedule slipped" (Client Project Manager, C2-CL-IN1)</li> </ul>	<ul style="list-style-type: none"> <li>-Case 2 provides three statements coming from client PM and consultant PM supporting the theme</li> <li>-Case 3 provides a statement coming from client PM supporting the theme</li> <li>-Case 8 provides two statements coming from client PM and consultant PM supporting and validating the theme</li> </ul>

Themes & Contribution	Supporting Statement	Source
<b>Theme 3: Individual Experience</b>  (Confirms theories that individual experience is an important factor associated with project success)	<ul style="list-style-type: none"> <li>- Every work was assigned to the member who is specialized and we had good number of people throughout. (Contractor Project Manager, C2-CL-IN3)</li> <li>- DC stated that due to the lack of experience of the foreman and skilled labors, there is no significant progress. (Case 3-Progress Meeting 34)</li> <li>- The project manager was not qualified and his team was not qualified. (Client PM, C3-CL-IN1)</li> <li>- The team responsible for the hands on work was weak and was not good enough to work. (Consultant PM, C3-CL-IN2)</li> <li>- This is pure technical work so the project team's technical skill [skill of all individual] should be high and it was high. (Contractor Project Manager, C2-CL-IN3)</li> <li>- The team was so strong [all individual experience of members] to drive the project by themselves. (Consultant Project Manager, C2-CL-IN2).</li> <li>- They [project team members] did not have previous experience in the sewerage so they lacked the technical competencies. (Consultant PM, C3-CL-IN2)</li> <li>- As I mentioned, this was our first project and the team needed more similar project to build their competency and skill. (Contractor PM, C2-CL-IN3)</li> <li>- The team experience was very high, which made it easier for them to make this project a successful project. (Client Project Manager, C5-CL-IN1)</li> <li>- Team members have strong technical knowledge and they are specialized in this field. (Consultant Project Manager, C5-CL-IN2)</li> <li>- The team experience was very high, which made it easier for them to make this project a successful project. (Client Project Manager, C5-CL-IN1)</li> <li>- Not all the team members were competent, and we highlighted this many times during meetings. This surely affected the performance in terms of meeting the time. (Client Project Manager, C7-CL-IN1)</li> <li>- Insufficient number of labor force, plant and qualified key staff, to meet the program. (Consultant Project Manager, C7-CL-IN2)</li> <li>- PIL stated that, ADMAC to increase skilled experienced manpower (foremen, pipe fitter, carpenter, steel fixer, mason etc. and equipment's at site to recover the overall delay in the project. (Case 7 - Progress Meeting No. 19)</li> </ul>	<ul style="list-style-type: none"> <li>-Case 2 provides three statements coming from contractor and consultant PM supporting the theme</li> <li>-Case 3 provides three statements coming from client PM, consultant PM, and progress meeting 34 supporting the theme</li> <li>-Case 5 provides two statements coming from client PM and a statement coming from consultant PM supporting and validating the theme</li> <li>-Case 7 provides three statements coming from client PM, consultant PM, and progress meeting 19 supporting and validating the theme</li> </ul>
<b>Theme 4 Organization experience</b>  (Confirms theories that organization experience is an important factor associated with project success)	<ul style="list-style-type: none"> <li>- The team [the contractor] was very good and had many years of experience, as the company was specialized in this type of work. (Consultant Project Manager, C2-CL-IN2)</li> <li>- Because [low project performance] Al Jabir contracting company project in the sewerage industry is little. (Client PM, C3-CL-IN1)</li> <li>- All of the team members were new to the sewerage industry and had little experience [including their company]. The management wanted to go into this industry so this was our first project. (Contractor PM, C3-CL-IN3)</li> <li>- They [the contractor company] did not have previous experience of sewerage so they lacked the technical competencies. (Consultant PM, C2-CL-IN2)</li> <li>- Whenever we have a technical problem, we refer to our database document [of the company] for different technical options. (Contractor Project Manager, C5-CL-IN3)</li> <li>- They have done many similar projects. They were able to brainstorm to solve problems quickly. Proper training and Lesson learn document [available at the company] from previous projects surely helping them. (Consultant Project Manager, C5-CL-IN2)</li> <li>- We [the contractor company] have been in business for long and we have dealt with all authorities as we executed many projects in the past. (Contractor Project Manager, C8-CL-IN3)</li> </ul>	<ul style="list-style-type: none"> <li>-Case 2 provides two statements coming from consultant PM supporting the theme</li> <li>-Case 3 provides a statement coming from client PM supporting the theme</li> <li>-Case 5 provides two statements coming from consultant and contractor PMs supporting and validating the theme</li> <li>-Case 8 provides a statement coming from contractor PM supporting and validating the theme</li> </ul>

Themes & Contribution	Supporting Statement	Source
<b>Theme 5: Top Management Support</b>  (Confirms theories that top management support is a critical success factor)	<ul style="list-style-type: none"> <li>- But the home office [top management] was delaying the material procurement. And this is was one of the major problems. (Client PM, C1-CL-IN1)</li> <li>- The home office [top management] support was very weak mainly because of bad management. But the management was not there. The team's experience and management were weak. The managerial support was weak. The factor that may affect the project negatively is management. (Client PM, C3-CL-IN1)</li> <li>- Management was from the client side and contractor side was good as they supported the team throughout the project. (Consultant PM, C2-CL-IN2)</li> <li>- If their top management was not involved, this project would have not finished on time. (Client Project Manager, C5-CL-IN1)</li> <li>- Good support from Besix management in this project. (Consultant Project Manager, C5-CL-IN2)</li> <li>- We had many issues on this project and the management was there for us. (Contractor Project Manager, C5-CL-IN3)</li> <li>- They always had shortage of man power and the management was not interested in supporting. (Client PM, C6-CL-IN1)</li> <li>- They were not very much supportive. They could not help in assigning the right manager, the right experienced team, and good internal control. (Consultant PM, C6-CL-IN2)</li> <li>- We requested the management to increase manpower but due to other commitment, they were not able to. (Consultant PM, C6-CL-IN2)</li> <li>- Enough manpower was really an issue for this project and had a very bad effect on project performance. We suggested the solution [to contractor top management] to use Alswaed, which is a manpower supply company, but that was not done. (Client Project Manager, C7-CL-IN1)</li> </ul>	<ul style="list-style-type: none"> <li>-Case 1 provides a statement coming from client PM supporting the theme</li> <li>-Case 2 provides a statement coming from consultant PM supporting the theme</li> <li>-Case 3 provides a statement coming from client PM supporting the theme.</li> <li>-Case 5 provides three statements coming from client PM, consultant PM , and contractor PM supporting and validating the theme</li> <li>-Case 6 provides three statements coming from client PM and consultant PM supporting and validating the theme</li> <li>-Case 7 provides a statement coming from client PM supporting the theme and validating it</li> </ul>
<b>Theme 6: Motivation Misalignment</b>  (Increases the generalizability of previous literature to the UAE)	<ul style="list-style-type: none"> <li>- Giving incentive [aligning an objective with motivation] to the team to learn could have improved their learning as they will be more motivated to solve problems and issue. (Contractor PM, C3-CL-IN3)</li> <li>- Our team was motivated throughout the project and we give appreciation letters and incentives [aligning an objective with motivation]. (Contractor PM, C2-CL-IN3)</li> <li>- Their problem solving skill was weak as they were not motivated. (Consultant Project Manager, C9-CL-IN2)</li> <li>- It got the project to be delayed. They could not find replacement and they paid penalty for that. (Consultant Project Manager, C10-CL-IN2) PLUS Motivation is important of course and due to the unavailability of PM they team may got de-motivated as they needed a leader to keep on motivating them. (Contractor Project Manager, C10-CL-IN3)</li> </ul>	<ul style="list-style-type: none"> <li>-Case 2 provides a statement coming from contractor PM supporting the theme</li> <li>-Case 3 provides a statement coming from contractor PM supporting the theme</li> <li>-Case 9 provides a statement coming from consultant PM supporting the theme and validating it.</li> <li>-Case 10 provides two statements coming from client PM and consultant PM supporting and validating the theme</li> </ul>



Themes & Contribution	Supporting Statement	Source
<b>Theme 7: Knowledge Sharing</b>  (Confirms theories that knowledge sharing is an important factor associated with project success)	<ul style="list-style-type: none"> <li>- It was felt that the connection between the members was not so good and that made a tense environment [to share knowledge] which indirectly effected the project progress. (Consultant PM, C3-CL-IN2)</li> <li>- He lacks the communication and relationship skills which I believe affected his outcome as an HSE manager. They were not able to meeting the HSE standard resulting to public inconvenience and compliance. (Client PM, C9-CL-IN1)</li> <li>- Connection was very good and no major issue that affected the project. (Client PM, C10-CL-IN1)Plus The progress kept on improving through good monitoring and control. (Client PM, C10-CL-IN1)</li> </ul>	<ul style="list-style-type: none"> <li>-Case 3 provides a statement coming from consultant PM supporting the theme</li> <li>-Case 9 provides a statement coming from client PM supporting the theme</li> <li>-Case 10 provides two statements coming from client PM supporting and validating the theme</li> </ul>
<b>Theme 8: Joint Problem Solving</b>  (confirms theories that relationship quality has a significantly positive influence on joint problem solving)	<ul style="list-style-type: none"> <li>- We [contracting parties] kept an eye especially on this [a problem] as they were many of them. That is due to the controlled [solving] plan we set. (Consultant Project Manager, C4-CL-IN2)</li> <li>- We [contracting parties] understand the importance of the control so we decided to do weekly monitor to overcome any issue quickly. (Contractor Project Manager, C4-CL-IN3)</li> <li>- To avoid facing problem with this, we [contracting parties] use to highlight the importance of this in almost all of our meetings so we were able to control and monitor it. (Client Project Manager, C4-CL-IN1)</li> <li>- We [contracting parties] dedicated a member only looking after this [monitoring and control]. Team was always in good relation and we managed to improve the average progress as we put more focus and works started to open. (Contractor Project Manager, C4-CL-IN3)</li> <li>- We [contracting parties] were not getting support from these authorities and made things too complicated for us. (Contractor Project Manager, C6-CL-IN3)</li> <li>- Projects are always full of problems and sometimes you need a very strong support from clients and your management to be able to solve them as the case of materials, equipment and team in this project. (Contractor Project Manager, C7-CL-IN3)</li> <li>- You need to be supported to be able to solve problems easily. (Client Project Manager, C7-CL-IN1)</li> </ul>	<ul style="list-style-type: none"> <li>-Case 4 provides four statements coming from client PM, consultant PM, and contractor PM supporting the theme</li> <li>-Case 6 provides a statement coming from contractor PM supporting and validating the theme</li> <li>-Case 7 provides two statements coming from client PM, and contracting PM supporting and validating the theme</li> </ul>
<b>Theme 9: Implementation Intention</b>  (confirms the theories affirming that participants with implementation intentions will generate more creative solutions than participants without implementation intentions)	<ul style="list-style-type: none"> <li>- ADSSC/DC displayed their concern that no action [and intention] has been taken yet with regards to the solution promised by the contractor to solve the sudden reduction of manpower issue. (Case 3-Progress Meeting 28)</li> <li>- It is basically lack of good planning and experience. They were too late [no intention] to provide these submittals which contributed to project delay. (Client Project Manager, C6-CL-IN1)</li> <li>- Despite working for a governmental project and the letter of assistance they got, there were not able to build a good relation with authorities to gain support when issues come up. These permits and approval certainly delayed the project. (Client Project Manager, C9-CL-IN1)</li> <li>- The subcontractor was not following the schedule we gave them which in turn affected our performance unfortunately. (Contractor Project Manager, C9-CL-IN3)</li> <li>- Resource planning was weak or it could be financially so they save money. (Consultant Project Manager, C9-CL-IN2)</li> </ul>	<ul style="list-style-type: none"> <li>-Case 3 provides a statement coming from progress meeting 28 supporting the theme</li> <li>-Case 6 provides a statement coming from client PM supporting the theme</li> <li>-Case 9 provides three statements coming from client PM, consultant PM, and contractor PL supporting and validating the theme</li> </ul>

Themes & Contribution	Supporting Statement	Source
<b>Theme 10: Leadership National Culture</b>  (Confirms theories that leadership national culture important factor associated with project success)	<ul style="list-style-type: none"> <li>- The team leader here and abroad they do not have the local experience [including country culture]. These people may have strong experience back home and maybe fit but when they come here the local experience is needed. (Client PM, C1-CL-IN1)</li> <li>- This was their first project here so prior to this project they lacked the local experience. (Consultant Project Manager, C1-CL-IN2)</li> <li>- All team members were brought from Singapore to work on this project so we were all new to the area. (Contractor Project Manager, C1-CL-IN3)</li> </ul>	-Case 1 only provides three statements coming from client PM, consultant PM, and contractor PM supporting the theme
<b>Theme 11: Monitoring and Control Strategy</b>  (confirms theory and brings findings from other cases from the public sector and helped to answer how and why questions)	<ul style="list-style-type: none"> <li>- Internal control is a very important part of the project. Through frequent meetings and strict schedule to follow and good cost control, were able to do a very good project control. (Contractor PM, C2-CL-IN3)</li> <li>- To avoid facing problem with this, we use to highlight the importance of this in almost all of our meetings so we were able to control and monitor it. (Client PM, C2-CL-IN1)</li> <li>- We had a very tight monitoring through timely progress meeting to put things on track as without doing this the project would have taken even longer time to finish. (Client Project Manager, C7-CL-IN1)</li> <li>- Communication was fine and there was no major issue. Through timely progress meeting, we were able to avoid communication issues. (Client Project Manager, C7-CL-IN1)</li> <li>- We used to make progress meetings regularly which is a perfect way monitor the work and communicate issues and problem that may affect the progress of work. (Consultant Project Manager, C7-CL-IN2)</li> </ul>	-Case 2 provides two statements coming from contractor and client PM supporting the theme -Case 7 provides two statements coming from client PM, and a statement coming from consultant PM supporting and validating the theme

## **Chapter 8: Theoretical Framework and Conclusion**

### **8.1 Introduction**

According to Whetten (2002), a theoretical framework is a social phenomenon representation, to explain its behavior, in terms of processes and general characteristics and the relationships between them. Therefore, the framework of this study provides explanation of how factors of intangible resources are framed. As formulated in research objective 3, the purpose of this framework is to display the research results in a digestible form to project practitioners and to share it with the research community (Weick 1989). The themes identified during the current study address the literature gap and add more clarification to our understanding. This chapter provides a general discussion based on the data analysis presented in Chapters 5, 6, 7 and the compiled list of evidence in table 7.20. It also reacts to the literature gap presented in Chapter 2. The discussion in section 8.2 includes the need for a theoretical framework and on how the findings were framed in order to generate the theoretical framework of this study; and section 8.3 presents the key contributions of the study.

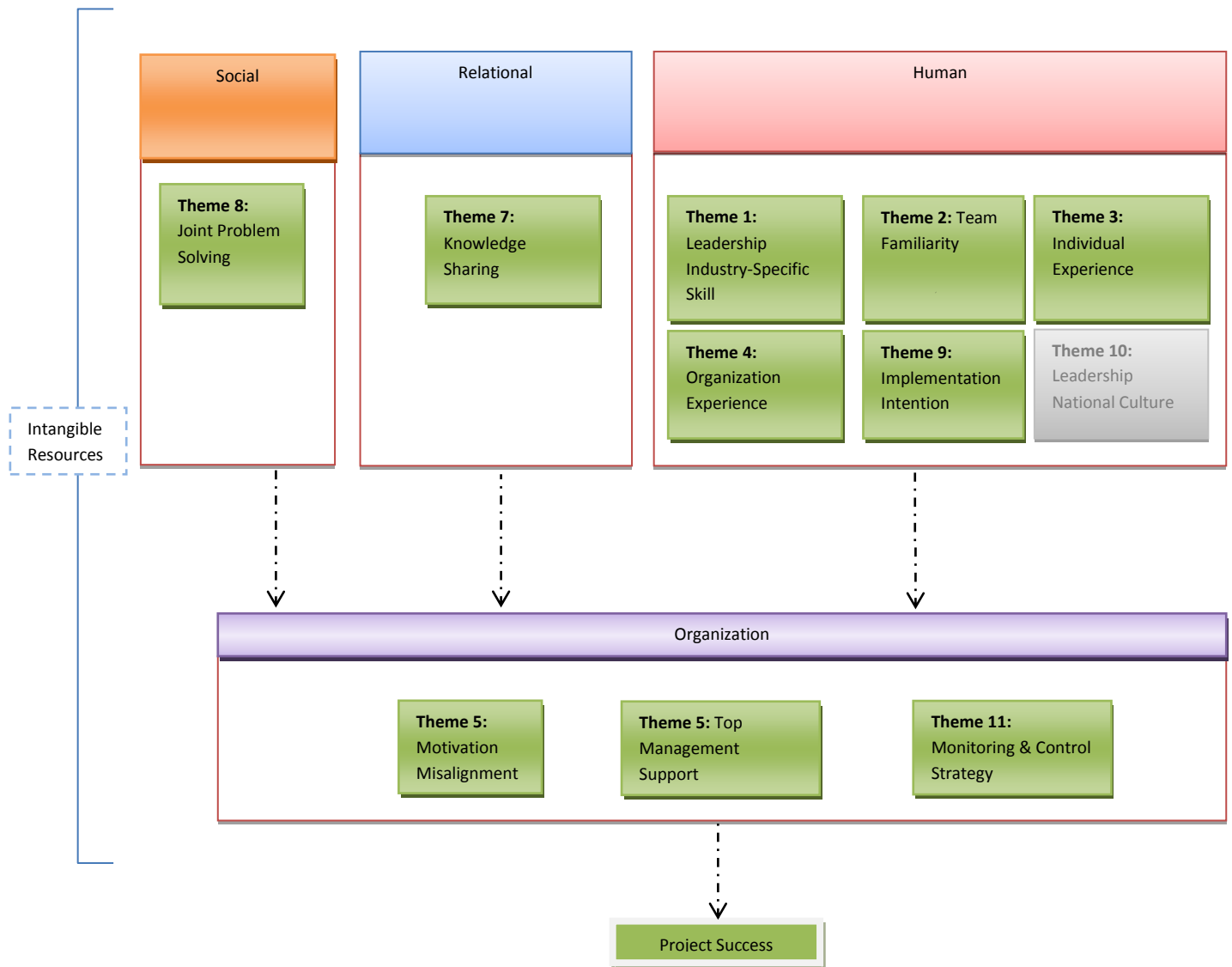
The chapter starts with arguments regarding the need for a framework. Then, following Chapters 5, 6, and 7 analysis works, it presents a theoretical framework that links the four categories of intangible resources to project success. This chapter also presents the framework's theoretical and empirical contributions. The key contribution section discusses possible future work from the perspective of a theorist (Whetten 1989). Furthermore, it presents a discussion on the possible future work from a practitioner perspective. The section also explains areas where further enhancement on the model can be made. However, since the information from each project is mainly based on thirty interviews, on a limited dataset and limitations of data collection methods, it has to be noticed that there is a need for more research to disprove or confirm the relations presented in the theoretical framework. Thus, this chapter also presents linking points for additional research in the future (Weick 1989).

### **8.2 Framing the Findings**

Following Chapters 5, 6, and 7 analysis works, the researcher developed a theoretical framework. The researcher was able to find explanation for the four research questions on how the intangible resources influence project success. The emerged themes show what was suggested by the RBV as

factors related to human, relational, organization, and social aspects identified in the framework are scarce and difficult to trade, appropriate, imitate, and give a competitive advantage (Amit and Schoemaker, 1993; Madhok 2002; Porter 1991). According to Barney (1998), these factors are considered a strategic asset having characteristics of being rare, valuable, inimitable, and having an organizational focus. Therefore, based on Barney's VRIO framework, discussed in chapter 2, and the themes presented in the previous chapters, the researcher has linked the four categories of intangible resources to project success and established relationships among them. Figure 8.1 is a consolidated framework that illustrates the study model. The identified success factors are classified theoretically into four dimensions. The model proposed includes the effects on project outcomes for these four dimensions. The framework presents the main findings of directions for developing the project management intellectually in relation to the developing practice in the areas of social, relational, organizational, and human aspects and practitioner development. It can be the starting point for researchers to make it easier to explore the core resources possessed by a project or a firm.

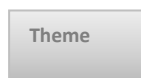
**Fig. 8.1 Theoretical Framework Developing Process**



### Legend

Potential Link - - - - -

Theme Not Validated



Theme Validated



### 8.3 Model Implications

The developed framework can assist public organizations in Abu Dhabi to purposefully and progressively develop its capabilities to deliver projects successfully. This framework can help managers to identify, develop, protect, and deploy resources and capabilities in a way that provides the firm with a sustainable competitive advantage and, therefore, a superior return on capital. It tries to enhance the ability of managers to better understand the core resources (i.e., those resources that are most valuable, rare, inimitable, and non-substitutable) possessed by a particular public organization. The following paragraphs explain how public sector organizations in Abu Dhabi can use this model, and how it can be used to develop successful projects.

**Organization Capital** - The focus of the organizations can be in the form of top management support (Theme 6), motivation misalignment (Theme 5), and monitoring and control strategy (Theme 11). For example: following the understanding of the top management support (Theme 6) presented in this study, the results suggest that top management support is important in every case and provides a strong explanation of why the projects succeeded or failed. Management support could be in the form of aligning the human and financial resource elements, such as an experienced team capable of meeting the project needs. It also plays a prime role in the success of a project team by giving the required political backing and aligning the resource management systems (human, financial, and technological) with the needs of projects. Earlier suggestions support the claim that top management support is a 'meta-factor' that incorporates other Critical Success Factors (CSF) (Poon and Wagner, 2001). This is possibly a main result since it disproves the allowances recommended by Standish (1996) and by suggestion much of the present knowledge and practice. The findings of this study show that the most important condition for project success such as competent, focussed and hardworking project staff may receive lower value. Project staff may play a very important role in project success or failure but if the minimum level of competency is recruited, then project success can be almost completely regulated by the quality of top management support. Additionally, high-level planning seems to play important role in project success if it reveals the motivations and beliefs of a project decision-making sponsor. User involvement seems to be valuable in calling requirements, but their actual worth seems to be present when top managers use the procedure of meeting user requirements to accomplish expectations. Transparency of top management plays an important role in undertaking issues and conflicts between diverse user priorities. The findings also reveal that for the project to be effective, the project team should be supported to take action proactively and promptly with regards to

problem solving. Furthermore, from the definition of top management support (TMS) that is previously presented we can see that TMS is “when a senior management, the CEO and other senior managers devote time to review plans, follow up on results and facilitate management problems” (Young and Jordan, 2008). The cost and potential of the project will determine what time should be spent. We can understand this as the fact that CEO and the other senior managers should allocate time only to be aware of the project status and interfere if necessary and a project top management should employ more time on these activities. Understanding how important the TMS factor is, gives the explanation of why we have some projects successes or failures. Top management support also relates to effective decision-making to manage risk and to authorise business process change. It appears that TMS is most dependent on the ability of the project client to work with other top managers to authorise business process changes and make decisions to mitigate or bear risk. Success also appears to be dependent on the willingness of the CEO to actively intervene when the client lacks the authority or influence to resolve any impasses in decision-making (Young and Jordan, 2008).

Another example of an organizational focus is on motivation misalignment (Theme 5). Project teams who are able to troubleshoot with quick solutions had a higher chance to solve operational and technical problems in a timely manner, which could greatly improve both the timing and quality of their projects. However, problem-solving ability requires a motivated team. Hence, this analysis showed the influence of motivational misalignment on accomplishment of business-as-usual (BAU) goals, informed by the motivational theory literature. Results in the case study showed that not effectively aligning project participant motivation can have a harmful effect on project performance. Motivation towards the BAU goals can be critically impacted by specific aspects of the procurement approach if not appropriate under the project settings. Rose and Manley (2010) presented BAU goals as follows:

- The inability of the project team to control the financial incentive performance due to perceived inequitable contractual risk allocation
- The late involvement of the managing contractor, who could otherwise have influenced design and construction cost risks
- The inaccuracies in the guaranteed construction sum (GCS) price estimate due to tender submission time pressures and a hasty negotiation process resulting in a low expectancy of goal achievement and receiving the incentive reward

- The misalignment between the project performance goals and the incentive goals resulting in a perception of procedural injustice and decreasing the expectancy of goal achievement
- The absent of incentive performance measurement process under the project conditions.

The motivation of an assigned project contractor might be affected by a desire for justice and reciprocity that shape their perceptions of a financial incentive system and not only by no desire to maximize income and avoid project risk (Rose and Manley, 2010). Consequently, project risk should be assigned and accomplished in line with its capacity to encourage balanced behaviour and collaboration. Numerous projects, mainly those that apply a performance-based encouragement mechanism (such as in case study 2), require higher-order goals and deliver the project team the intended option to struggle for these goals (Rose and Manley, 2010). Deprived of incentives and an insight by participants that they can regulate the project risks related with objective accomplishment, a failure to accomplish similar goals is probable. Consequently, a financial incentive system has to be set at a suitable amount to recompense equally for contractor project team risk and to encourage effort. Incentive amount is a key factor of a contractor project team's level of effort. Reason for this we can find in the higher amount (more money per unit of effort) raised by the contractor's project team's income (Zenger and Marshall, 2000). So, the incentive has to be large enough to stimulate the contractor's project team (based on the effort/cost to achieve). Distributive justice principles give support to this. Consistent with justice theory, founded on Adams (1963) equity theory, if the amount of a financial incentive does not equally connect with the anticipated level of performance, in relation to the incentive presented and distributed, it might reduce motivation.

Another example of an organizational focus is on monitoring and control strategy (Theme 11). Project success can also be affected by two very important management functions such as monitoring and control (Idoro, 2012). When we talk about strategic and tactical decisions for achieving project objectives, planning ability plays very important role. On the other hand, the monitoring and control deliver the required checks and sense of balance for confirming that the plans and overall project objectives are accomplished. Plans have to be supplemented with monitoring and control by the management to achieve projects goals. Mauricio and Carlos (2002) supported the claim that the performance of organizations in project delivery mainly



rest on their control arrangements and production planning. Kharbanda and Pinto (1996) observed that in most project failures the reason for it could be traced to insufficient and mistaken planning or visionless devotion to the originally expressed plans regardless of how the environment transforms in the interim (Idoro 2012).

**Human Capital** - The focus of the organizations on the intangible resources of the human capital can be in the form of Leadership Industry-Specific Skill (Theme 1), Team Familiarity (Theme 2), Individual Experience (Theme 3), Organization Experience (Theme 4), Implementation Intention (Theme 9), and Leadership National Culture (Theme 10). For example, more focus should be on technical skill during selection processes of project leaders. The project leader is one of the powerful factors for an organization to achieve its mission and goals. In a constantly changing environment, the project leader should not only have “positive values, highest levels of ethics, morality, lead from the heart, personal capabilities, out-of-the-box thinking, and interpersonal skills” (Pandya 2014, p. 40), but also should have in-depth technical knowledge. As Walker said (2011), for the twenty-first century a completely new style of leadership is a necessity. The project manager should have style that delivers success to time, budget and quality, and position his/her organization in a way that will make it able to share and recall knowledge, and subsidizes to organizational sustainability. Nevertheless, in order to be an operative project leader, it entails a mixture of technical skills, and a capability to apply the behavioral competencies defined by Muller (2012). Moreover, vision, ethics and morality and the ability to lead change is necessary. Projects that are yet to come should be well served to select project managers who display the leadership skills and characteristics that are necessary for project success and sustainability of the organization. Experience that is specific for a certain industry can significantly contribute to transactional and transformation leadership skills that are necessary for dealing with different situations throughout the project cycle successfully. With such technical and industrial experience, the assigned team leader can provide a better technical excellence to team support by motivating the team, facilitate team activities, and organize team work in a process oriented way. Moreover, the assigned team leader can nurture, enforce, and monitor the product technical excellence by ensuring it is realized by members of his/her team. With such technical and industrial experience, the assigned team leader can support innovation in the team work. This is by developing the team spirit and desire to experiment and try new things and unconventional solutions. Furthermore, with such technical and industrial experience, the assigned team leader can better organize accumulated knowledge gained by the team, and making it available and easy to retrieve whenever needed by any team member. Also, organizing the team process, which is a

responsibility that may take a lot of time and effort to monitor and foster. Therefore, project process is managed by the project manager, a person who plays a significant role in supervision of the project and project team, and eventually guaranteeing project success. Examining special skills of leadership, such as their technical skill, and defining their constructive influence can add value to project managers and consequently may lead to project success. Also, the industry-specific skill can contribute to some leadership styles in a way as: team building, openness, self-confidence, organization, and clearly defining project successes, reevaluating and making adjustment to the situation when necessary (Kaminsky 2012). By accepting these abilities, the project's stakeholders, such as project consultants and clients, are expected to feel the positive impact of a successful project. Projects may similarly move more efficiently and powerfully, getting positive results in a lesser amount of time. This is valuable not only to the investors, but also to the parties that are involved: the organization, the project manager, executive staff, team members, and outsourced facilities (Kaminsky 2012).

Another organizations focus on the intangible resources of the human capital can be on the leadership national culture. Public sector organizations should develop guides for public sector contracting projects. These guides to be made in order to assist project managers in the field with their work. These guides should be specific to the particular environment of the country. This is because the significant challenge project managers' face is that each environment is not the same and there is the possibility that what works at home may not work in a foreign environment. Project managers should operate within the laws and regulations of the host country. Therefore, project managers must understand the national culture of the country where they are operating in. This will also lead to better synchronisation with their team members. Senior management of these public sector organizations must understand that selecting a culturally savvy project manager with certain leadership traits can be an important factor for the success of projects. Project managers must also have some of the leadership traits to build and manage a high-performance team in a high-power distance culture. Not fully understanding the national culture, values, beliefs, and norms can lead to project failure. Furthermore, bringing a foreign workforce and best practices may not be enough to plan, execute, and successfully deliver projects in a high-power distance culture such as the UAE. It requires a good knowledge and understanding of the national culture, values, beliefs, and norms.

Another organizations focus on the intangible resources of the human capital can be on the experience. Prequalification process should put more focus on individual experience, team experience, and organization experience. For example, individual experience in a particular industry may be exactly what matters to project success rather than experience in general. This is important especially when various team member roles require different technical skill sets. Accordingly, it is expected that as an individual's experience increases, so too does the possibility of project success. Aspects of individual experience include technical requirements, quality standards and environmental regulations. Being without knowledge in the three areas, a project may be significantly delayed; it may have major cost overruns, or have major legal problems, etc. Experience with project-related activities provides individuals with opportunities not only to build upon, but also to learn from prior mistakes, which reduces the possibility of repeating already made mistakes (Argote 1999; Haas 2006). Therefore, with growing experience, individuals are expected to become more proficient and to develop effective routines for successfully completing improvement projects. Another example is on the organization experience. The archived project documentation can provide an effective organizational memory of both "hard" and "soft" task-related information and knowledge. This gives more opportunities for individuals to access and make use of a variety of prior project-related materials, including project planning documents, detailed description of analyses conducted, documented learning, etc. This kind of culture of creating and disseminating project-related knowledge is definitely pervasive. When it comes to soft information, individuals can have access to the project database to identify experts with respect to a particular issue. Using access to such organizational experience, team members can have a better sense as to what it is that works and what does not, and therefore they do not have to experiment with every possible routines (Reagans et al. 2005). Therefore, as organizational experience grows, the opportunities for individuals to benefit from knowledge accumulated grows too. Another example is on the team familiarity. This type of experience influences the project team planning capability, which proved to be one of the determining factors that had an influence on project success. Under specific circumstances when team members have spent some time working together formerly, coordination losses may be diminished and factors such as team unity may rise since any associated issues will probably be "worked out" formerly (Banker et al. 2001; Huckman et al. 2009; Reagans et al. 2005; Tuckman 1977). Moreover, this understanding will possibly encourage trust among team members, which enables the quantity and quality of information shared (Edmondson 1999; Lapre and Nembhard, 2011; Uzzi 1997). As stated by Reagans et al. (2005) and Huckman et al. (2009), the

team's familiarity in the industry could help encountering the indicated quality. This team familiarity factor can support implementation planning. Planning contributes to creative problem-solving process at much earlier stages and not only influences the implementation of innovative ideas. When the task is complex, an individual will show their creativity to bring a useful solution (Burke and Barron, 2014; Hicks 2013; Proctor 2014). Apparently, a plan that is developed with the purpose to implement this solution represents an element of this generation process. Planning can allow advanced and well-organized problem-solving through various ways such as the identification of critical resources, through organizing the ideas as they are developed, and through the acquisition of skills and social support. Therefore, implementation intentions can influence plan development and participants with implementation intentions will generate more creative solutions than participants without implementation intentions.

**Relationship and Social Capitals** - The focus of the organizations on the intangible resources of the relation and social capital can be in the form of Knowledge Sharing (Theme 7) and Joint Problem Solving (Theme 8). For example, public sector organizations in Abu Dhabi should develop strong relationship management system for more successful projects. Strong relations between the contracting parties result in time efficiency because this factor tightens the coordination among the member groups (Ebbers and Wijnberg, 2009). In addition, this tool assists in a smoother transition to any contingency plans (Uzzi 1997). The level of relationship among the parties is a determinant on how well the parties place work with their network (Granovetter 1985) and how pleased they are with the outcome (Uzzi, 1997). The trust formed due to the close relations lead to more loyalty (Uzzi 1996) and forms a ground for contract management to build upon (Ebbers and Wijnberg, 2009). An essential factor to enhance relations is for the contracting parties to be considerate. Once the parties are fully aware of their responsibilities and the ultimate goal, the parties should be able to openly talk and discuss with each other. The analysis enables them to deal with the problems of the other party because they are already aware of the other's concerns. Establishing an efficient communication channel has various advantages to the success of the relations among the contracting parties. A good quality relation lowers the likely hood of facing challenges (Wong and Cheung, 2005), helps in preventing any misinterpretation and procrastination of the work (Love et al. 2010), and rapidly settles divergence (Wong and Cheung, 2005). These factors act to ease the progress of networking. The outcomes prove that timely project information (Macneil, 1986b) is necessary to strengthen the relationships. Once strong communication is established the transaction of information is precise and on time. The prerequisite of precise

and objective information assists in improving the trust among the parties. Furthermore, the clients as a whole will be able to foresee prospect issues in advance. The contract has to be designed in a way that the parties can explicitly understand the terms and conditions as well as the tasks delegated. Taking this format into account increases commitment and prevents the possibilities of the parties acting for their own interest (Williamson 1985). Moreover, contracts form channels which help the parties harmonize with the works of different contracting parties (Jap and Ganesan, 2000; Mellewigt et al. 2007). This prevents dispute that may rise in terms of cost and consequently, fosters cost control. Parties having fair shares of risk give the guarantee that the rewards of their achievements will be proportional. With an agreement to equally share the profit and the loss, none of the parties can gain advantage over one another by transferring the costs (Love et al. 2010). By doing so, the parties will be more willing to connect and focus on benefiting as a whole. Moreover, this commitment assists in time management. When criteria to evaluate the performance of the accomplishments are used, the parties are willing to comply and avoid possible oppositions. Furthermore, the alignment of objectives prevents any time loss due to the conflicts which could have been seen if the parties were striving for their own interests rather than the overall benefit. When an unforeseen situation occurs, the mutual goal is used as a guide in finding a prompt answer to what is being faced. Also, a noteworthy amount of time efficiency is visible when the parties are working collectively rather than individually. Once they realize the existence of a problem they coordinate to solve it, which results in timely project completion. This cooperation promotes a mutual communication, fostering good relationships throughout the project lifetime. When problems occur, the relationship between the parties can act as a means to swiftly solve the problem and cause no harm to the progress of the project. In addition, enabling the parties to have an adequate amount of flexibility helps them find alternative paths as a solution to the problem and thus saves time. The pace and the level of conflict among the parties are dependent on how they approach solve ambiguous issue when the contract is incomplete (Baker et al. 2002). Joint coordination requires the contracting parties to devote more time in order to reach an agreement accepted by members. On the other hand, trying to reach unanimity when the contract is adjustable is a time loss which can affect project progress. Therefore, relationship quality has a significantly positive influence on joint problem solving. It indicates that public projects can enjoy the benefits from good relationships. To nurture relationships, it is suggested that contracting parties should share information in an effective manner. In addition, managers should pay greater attention to maintaining relationships

during dormant periods. Building a solid reputation will help a company to sustain its influence in the industry. Information sharing gives rise to better relationships.

Another area public organizations in Abu Dhabi should focus on is developing a knowledge sharing system. The professional knowledge and skills of individuals in the project team are important and valued in project environments. Project team members' knowledge, tacit knowledge or know-how in particular, and the ability to communicate effectively will result in positive project performance. Healthier individual and group level performance, sharing and combining knowledge play a vital role among team members. Therefore, operative knowledge sharing by team members is an essential element in projects that will result in better performance and project success. Project scope can be changed unpredictably and this can influence the team performance and might create stressful situations (Wang and Ko, 2012). Teams which show superior collaboration and knowledge sharing, are expected to decrease doubts and perform better. Also, in order to develop a team and to work on its improvements, vital learning from each project is essential (Ochieng and Price, 2010). This might be developed from sharing of tacit knowledge, for instance, and sharing of "lessons learned" (Goffin and Koners, 2011). Sharing of lessons learned will avoid repetition of activities and make sure that knowledge is used again across projects. Additionally, in a lessons learned record, project team members acquire the knowledge and learning they achieve from the project, naturally prepared when a project reaches accomplishment or a specific milestone is achieved, and is then incorporated into the project documentation (Newell et al. 2006) or shared in post-project reviews (Goffin and Koners, 2011). Furthermore, some examples of lessons learned that are connected narrowly to the tacit knowledge of project team members are, "dealing with project budgets, problem solving, coping with time schedules, and coping with changes in product specifications" (Goffin and Koners, 2011, p. 300). In cross-functional project teams that are designed of numerous individuals with different qualifications, knowledge, skills and expertise, sharing of such knowledge advances project effectiveness, raises the chances of project success and delivers a learning and progress opening for the team members.

## **8.4 Contribution**

A strong theoretical base and guiding that underline the discipline are lacking in project management research (Killen et al. 2012). Thus, perception and understanding of project management are not clear since there are no commonly accepted paradigms that are leading the discipline. Furthermore, since the project management discipline is developed on experience and different techniques and tool-practicing, evidence that the research literature has had a substantial impact on project management educational level is rather scarce (Almarri

and Gardiner, 2014a). Due to these gaps, this study was carried out to make two main contributions.

The first, it introduced a theoretical model that is applying the RBV theory application in project management. This model contributes in closing the gaps related to project management research lacking a strong theoretical base and guiding concepts. It contributes to additional developments of project management theory as well as to practice. The model brings understanding of what project management is truly about and how conceptual levels can be further developed and improved. This model links and displays the influences of 'intangible resource factors' in one coherent model and introduces a theoretical model that can be challenged or considered by further research as a starting point in a research context. Such understanding will also develop tools and practices that will affect education and practice in the discipline that will lead to more successful project accomplishments.

The second, the theoretical model developed in this research also contributes to improve the success gained in the past period and diminish the criticism that the RBV was built in a hurry by a few key contributors resulted in some aspects being less clear and less developed than one may wish them to be as well as those criticisms directed toward generalizability and operationalization of the constructs. Diminishing the criticisms of RBV has been done by using valid operationalization of constructs that can improve RBV application in project management research. In-depth interviews and case study methodologies for data collection helped to utilize RBV in research and practice. The collected data was further analyzed and used for reinforcements of the credibility and validity of the findings that will lead to better conceptual frameworks and practices for competitive advantage. This will lead to knowledge improvements in the field of study by which education and training programmes will be advanced and eventually enhance projects success.

Another contribution of this study is that the results depart from the concept that project leaders do not necessary need to have in-depth technical skills and knowledge since the usage of team members that are subject matter experts can provide the in-depth technical skills and knowledge back up. Here, we can associate this conclusion about leadership technical competency with Kaminsky's recently published study (2012) where the main point of the study was on the importance of non-technical leadership practices in IT project management. The study identified the main non-technical leadership practices that are essential for the successful accomplishment of IT projects. In his study, key non-technical leadership practices that are important for the success of IT projects are identified. Data for this study were collected from actual IT projects conducted at U.S. companies across numerous different industry sectors. On the other hand, as is the case of any other research, the sample could impact the results presented here. One of the main limitations of the study is that the companies that participated in the study were from the same major Midwestern city. Having the companies from the same geographic location can affect generalizability of the findings beyond the specific geographic location. Also, that study depended on participants'

remembrances of earlier activities. For some cases, participants' remembrances were based on activities even several years in the past and there is no doubt that past remembrances would not be very precise as remembrances of very current activities. Another limitation is that that study focused only on IT project management and its findings may not have been assumed to be applicable to other industries such as the utilities sector. There is no doubt that in the constantly changing environment, the project leader not only should have "positive values, highest levels of ethics, morality, lead from the heart, personal capabilities, out-of-the-box thinking, and interpersonal skills" (Pandya 2014, p. 40), but also thorough technical knowledge. As Walker (2011) said, for the twenty-first century a completely innovative style of leadership is a necessity: style that delivers success to time, budget and quality, but also does the positioning of the organization in a way that will make it able to share and recall knowledge, and subsidizes to organizational sustainability. Nevertheless, in order to be an operative project leader, it entails a mixture of technical skills, and a capability to apply the behavioral competencies defined by Muller (2012). This combination is necessary to create balance and develop into a leader that can produce an efficient team and satisfactory end results.

Another contribution is the motivation misalignment finding in this study that increases the generalizability of Rose and Manley's (2012) results to project management in the research context in the UAE. Achieving the generalizability of the results is important because the alignment of the motivation of contractors and consultants to perform better than 'business-as-usual' on a public sector project is a complex undertaking. The failure costs are high as misalignment can compromise project outcomes. This may have important practical implications for Abu Dhabi 2030 vision plan.

The control and monitoring strategy findings in this study was the subject of Idoro's (2012) study conducted with Nigerian contractors to measure improvements of project outcomes. The purpose of his study was to match the rates of project monitoring and control strategies usage influence on project outcome. One of the limitations is that a structured questionnaire survey cannot answer how and why questions. Also, it was hard to generalize findings for different study settings. This study's contribution is that it brings findings from other cases from the research context and helps to answer how and why questions for the control and monitoring strategies related to Site visit, site meeting, interim valuation and financial statement.



Evidence from this study found that relationship quality has a significantly positive influence on joint problem solving. This can be understood as the fact that public projects can obtain the benefits from good relationships, and this gives a positive answer to the third research question. In consort with the research done by Ning and Ling (2013) the research here has concluded that embedded network theory and relational contract theory are relevant to use in public construction projects, despite the fact that public clients must hold a distant relationship with them. In addition, the study showed relational transaction practices encourage strong relations and higher quality public projects. The findings of the study may be applicable to other acquisition construction practitioners in various geographical regions that use obvious and impartial procurement procedures. Public clients, main contractors, and lead consultants were the main parties used within the study because these are the only ones directly interacting with public clients (Ning and Ling, 2013). However, the relational exchanges do call for an integrated approach. As expected, the results support the classic wisdom that a strong coordination among the members has a positive effect on the performance level (Cheng et al. 2000; Rahman and Kumaraswamy, 2005). However, the responses from the study show that collective problem solving does affect project success. If the contracting parties set up communication channels (e.g. conducting workshops during the relationship formation stage) it can be influential to project outcome. For the contracting parties sharing of information is very important, so building a web-based database can also help. The findings of the study proposed a positive answer to Research Question 3 that was related to the claim that public projects might obtain benefits from relational dealings. Moreover, flexibility and contractual solidarity represent another contribution since both concepts may lead to significantly better time performance. The main suggestion of this result is that contracting parties have to reach agreement on the performance appraisal method, bring into line their goals, apply collective responsibilities, and plan and monitor the development of the project jointly. The contracting parties have to find compromise for the uncertainty questions and be very flexible as different circumstances change. Contracting parties are correspondingly stimulated to pursue more information on how their contracting parties do things and to have a better understanding of local customs. Finally, it is recommended that a key person who is capable to join the networks crossways the different parties has to be identified to develop confidence.

In regard to the attempt to find an answer to research question 1 on how human capital intangible resources influence project success, the project planning, problem solving creativity,

and implementation intentions relationship and their effect on project success were inspected to confirm the finding of Caughron and Mumford (2008) affirming that participants with implementation intentions will generate more creative solutions than participants without implementation intentions. This finding helped to resolve a few more limitations of that Caughron and Mumford's study, because it was conducted in a public setting and it allowed the researcher to generalise beyond laboratory populations and settings. The results given from this study have some theoretical implications as well as practical applications, as they give a clear pattern with regard to the effect of planning on creative problem-solving. It appears that recalling and reusing past experiences as a basis for creating a solution to an existing problem encourages the use of creative problem-solving strategies.

Young and Jordan (2008) and Young and Poon (2013) are the studies that were used as a base for this study in order to make available stronger empirical confirmation of how top management support is important for project success. The present study contributes the fact that current practice underlining project methodologies can be misapplying effort. Moreover, this study provides a review of the conventional wisdom of the past 40–50 years which can help top managers and practitioners to re-evaluate their activities. Those concepts can represent implications for board, senior management and project management practice as well as researchers and academia.

Another contribution of this study is the finding about the leadership national culture that can have practical implications for Abu Dhabi 2030 vision plan (even though more evidence is still needed for confirmation). Project managers working in high-power distance cultures, such as the UAE, must understand that inequalities in these cultures are readily accepted. It also explains that the power is distributed unequally between leaders and subordinates. Thus, project managers are expected to have more power than the team members. Similarly, the project manager needs to understand that their superior is expected to exercise more power than them. High-power distance culture also means that hierarchies exist in that culture, and people accept those hierarchies. When there are hierarchies there are also bureaucracies, which means it could take more time for decision-making and execution of project activities. Thus, a project manager must accept the hierarchies, bureaucracies, and a multi-step decision-making process in high-power distance cultures. Therefore, project managers with an acceptable style of management can be effective in performing and bringing mega projects (such as energy and infrastructure public projects) in high-power distance cultures.

Considering numerous different research studies done around the world and arguments in this work, the following conclusions can be reached:

- Relationship between national culture, leadership, and project success exists.
- Education of project management professionals on national cultural barriers and learning how to overcome them is necessary if they want to be successful global project managers.
- Bringing project managers and leaders from low-power distance cultures into a high-power distance culture may lead to project failure. Consequently, public sector organizations have to select project managers and leaders that are appropriately qualified on national culture and enjoy necessary leadership capabilities or personalities in order to perform and bring success to projects.
- Project managers and leaders have to be ready for challenges of inequalities and other cultural norms of the country or society if they want to build a high-performance team and bring success to projects.
- Effective project leadership coupled with a good understanding of national culture can help project managers build high-performing teams, which can lead to project success.
- Knowledge and training on national culture and leadership can help one become an effective and successful global leader and project manager.

The findings related to experience in this study may have some managerial implications for the Abu Dhabi 2030 vision plan. Absolutely, one of the key managerial implications study involves the role of team leader experience in the performance. This especially critical problem that needs to be solved refers to identifying an individual who has experience operating as a project leader may very well make the difference between team success and failure. On the basis of results, as long as the team is led and facilitated by an experienced team leader, such a project team can be comprised of individuals that do not necessarily have a great experience on team improvement. It is important to add, experienced team leaders are, by default, and inexperienced leading at one point in time, and such inexperience obviously has implications for project success. Findings suggest that if it is necessary for management to assign important projects to inexperienced team leaders, then it is much safer to do so in an organization with a significant amount of organizational experience with systematic improvement activities. Another, closely related implication is that in organizations in which improvement activities are at an early stage of deployment and team leaders are, for the most part, relatively inexperienced with such activities, management should rein in its expectations and provide

additional resources and facilitation on an as-needed basis. In the end, as discussed earlier in the study, team familiarity is an important factor associated with project success, at least in the context of an organization with a well-developed and deployed structured problem-solving process. The main managerial implication of this finding is that project leaders need to staff their teams with members that have experience working with one another on prior improvement projects, which certainly increases the flexibility of staffing such projects. Considering team familiarity worries aside, team leaders can focus their efforts on targeting the appropriately skilled individuals to join their improvement teams.

The next chapter discusses the research reflection because it important to understand how this research can be evaluated and understand the strength and weakness of building theories from case studies.

## **Chapter 9: Research Reflection**

### **9.1 Introduction**

The question on how should theory-building research using case studies be evaluated is very essential for this study. This is because it is important to understand how this research was evaluated and understand the strength and weakness of building theories from case studies. The likelihood of generating a novel theory from cases is one of the strengths. This is because creative insights are the result of the paradoxical evidence or the juxtaposition of contradictory (Cameron and Quinn, 1988). According to (Bartunek 1988), reconciling contradictions involves a process that forces researchers to reframe perceptions into a new insight. Reconciling evidence across cases, classifying data, using multiple data sources and the comparison between cases and literature are likely to increase the likelihood of creative reframing that can lead to a new theoretical vision. An additional strength is the likelihood of the emergent theory to be testable with a theme that can be proven false and constructs that can be readily measured. Constructs and patterns are likely to be measured as they have already been measured during the process of building the theory which involves extensive verification repetition.

According to Eisenhardt (1989), a parsimonious theory is good theory and the intensive use of empirical evidence has the potential to lead to a complex theory. Obtaining rich data may give the temptation to the researcher to build a theory that captures everything. The danger of this is that it may lead to a theory which is very rich in detail, but lacks simplicity. With vivid and voluminous data, theorists may lose their sense of proportion as assessment of the most important relationships and which relationship is idiosyncratic to a particular case become harder. Narrow and idiosyncratic theory is another weakness that may arise from building theory from cases. This is because building theories from case study is a bottom-up approach and the specifics of data produce the theory generalizations. This may yield a theory that describes a very idiosyncratic phenomenon.

Therefore, the question on how should theory-building research using case studies be evaluated becomes very essential for this study. However, even though there is no generally accepted set of guidelines for the assessment of this type of research (Eisenhardt, 1989),

adopting several criteria can help in finding answers. According to Pfeffer (1982), a strong theory building study yields good theory which is testable, parsimonious, and logically coherent. Another assessment of theory-building research is measuring the strength of the research method as well as the evidence grounding the theory. This involves asking if the researcher followed a careful analytical procedure, how supportive the evidence to the theory is, and whether rival explanations were provided. By looking at this study sample selection protocols, data collection procedures and analysis, and evidence for each construct the assessment can be made.

In light of the above discussion, this chapter concludes with the results and a discussion of the findings in the context of the overall research objectives and research questions. It looks back over the previous chapters of this research in order to assess the outcomes and the process of the research. Section 9.2 extends the discussion in chapter 3 (Research Methodology) about the validity of the findings based on what has been described in chapters 5 to 8. It reviews what seemed to work well and possible improvements to the research process on the basis of experience in contributing to the research aims (Silverman 2013). Limitations of this study are also discussed. Suggestion is made of some avenues for future research (section 9.3) including consideration for areas where academic research needs to be extended. Furthermore, the researcher's personal experience on the research journey undertaken is discussed and how his research process experiences have helped in making him a better researcher.

## **9.2 Research Process and Study Limitations**

This study aimed to understand the nature of the relationship between intangible resources and project success in public sector organizations by introducing a theoretical model that is applying the RBV theory application in PM. This model links and displays the influences of 'intangible resource factors' in one coherent model. In order to achieve this aim, three objectives have been defined. Firstly, to identify key intangible resources that affect project success, drawing on the resource-based view (objective 1). Secondly, to identify how social, human, relational and organizational forms of intangible resource capital affect project success (objective 2). Thirdly, to develop and validate a conceptual model that incorporates intangible resources and project success (objective 3).

The first objective was met by conducting a detailed literature review that allowed the researcher to identify success factors that might influence the successful completion of projects in terms of time, cost, and schedule. The categorization of human capital,

organizational capital, social capital, and relational capital formed the intangible resources framework of this research. Identification of the most vital resources facilitated insights into which resources were relevant. Therefore, in order to achieve the study objective 1, based on the assumption of the RBV on the internal assets that are difficult to trade and imitate, scarce and appropriate and give a firm its competitive advantage, the intangible resources, rather than the tangible, were the focus of this study.

The categorization of human capital, structural capital, social capital, and relational capital forms the intangible resources framework of this research. Therefore, to achieve study objective 2, four research questions were determined to guide the entire study and better facilitate analysis, as well as avoid being distracted by interesting but irrelevant digressions. As part of the process in identifying how social, human, relational and organizational forms of capital affect the project management success, the researcher had prepared to collect data by contacting the setting to be studied to gain their cooperation, clarify the purpose of the study, gather key contact information and obtain access to the archive. Since the data to be collected and examined included project documents, the researcher requested copies of these documents as well as permission to interview selected individuals. Determining the sample of the study was a prime objective (Merriam and Tisdell, 2015). The aim would be achieved by considering the unit of analysis for this study to be the capital projects in the utility sector in Abu Dhabi. Capital projects executed for the research setting presents a good sample for the utility sectors. This is because capital projects related to sewerage in Abu Dhabi are similar to those executed for the water, electricity and transmission lines, as they follow the same procedures and process since these public companies are in the same authority (Abu Dhabi Water and Electricity Authority - ADWEA).

The selection of cases in this study was a prime key to building theory (Study Objective 3). This selection allowed for the control of environmental variation which reduced extraneous variation as well as clarified the domain of the findings as a utility governmental company operating in Abu Dhabi. The ten cases of this study were chosen for theoretical reasons in order to replicate previous cases, extend emergent theory, and provide examples of polar types. Four of these cases were selected because they represent extreme situations and polar types that allowed the researcher to observe the unique themes of each case to emerge prior to generalizing the themes across cases. Furthermore, access, immediate availability of these key contacts, and richness of progress meeting reports of these four cases allowed for

developing a rich familiarity with each case which helped in accelerating the cross-case comparison phase. Within-case analysis and cross-case analysis of data were selected as the analysis techniques. The result were further compared with literature and confirmed by the confirmatory cases to enhance validity. Since this study rested on a limited number of cases, tying literature with the emergent theory has enhanced the theoretical level of theory building, internal validity, and generalizability. As part of achieving study objective 3, this process considered a broad range of literature. This includes asking what is it similar to, does it contradict with it, and what is the reason. There are two crucial reasons for examining literature conflicting with the emergent theory (Baumann 2013). One reason was the fact that if conflicting findings were ignored by the researcher, confidence in the findings would have been reduced. The second reason was the opportunity that could be gained from conflicting literature. The juxtaposition of conflicts would force the researcher to be more creative so the result of the study could be deeper insight into the conflicting literature and the emergent theory. This would also sharpen the generalizability limits. Literature discussing similar findings was also crucial. This is because similar findings tie together underlying similarities in phenomena usually not associated with one another. The result could be a theory with higher conceptual level, wider generalizability, and stronger internal validity. Moreover, to achieve study objective 3, this phase helped to assess how well the evidence derived from the study fits with case study data. The principal focus here was to constantly compare theory and data to assess the extent to which theory might fit the data. This is because a close fit between theory and data is crucial to build a sound theory. It gave the researcher the opportunity to see new insights from the data and come up with an empirically valid theory. This process included two steps. One step was the sharpening of constructs and the other step was verifying that the emergent relationships between constructs fit perfectly with each case evidence. From the within-case analysis coupled with various cross-case analysis tentative relationships between variables started to emerge. The next step would be to compare the emergent frame with the evidence from each case systematically. This step helped in assessing how well or poorly evidence fits with cases data. The idea here was to make the researcher constantly compare theory and data-iterating for the aim of understanding the nature of the relationship between intangible resources and project success in public sector organizations by developing a theory that likely fits the data. One step implemented in this study was to verify that the emergent themes and relationships agree or disagree with each case's evidence. Furthermore, to achieve study objective 3, the framework of this study provides explanation on how each category of intangible resources is framed. As formulated



in research objective 3, the purpose of this framework is to display the research results in a digestible form to project practitioners and to share it with the research community (Jugdev et al. 2013). As a result, internal validity was increased when linking the theory with the developed framework (O'Leary 2010). The theme identified during the current study and the numerous interviews cited come together to address the literature gap and add more clarification to our understanding. This phase also presents the framework's theoretical, empirical and practical fields key contributions.

However, an important limitation of this study to highlight is the second set of semi-structured interview questions. They provided the research with the opportunity to get more than one chance to interview and provided valuable information from the context of participants' experience. They also provided uniformity, reliable, comparable qualitative data as well as provided detailed answers, rather than simple 'Yes' or 'No' answers. However, these questions were designed initially to confirm previous themes emerged in chapters 5 and 6, to enhance validity of the finding. After conducting more literature review on recent studies, and conducting more critical assessment of data, a different set of themes emerged. Therefore, the questions had limitation on the side of confirming the new emerged themes from chapters 5 and 6 during the confirmatory cases. Thus, the evidence generated was not strong enough for some themes to stand b their own and they therefore require future studies to confirm.

Another limitation is that the analysis involves data collected for a single project client (ADSSC). However, by collecting detailed, project-specific data from archival sources, and conducting multiple interviews with the three assigned project managers for each project, the researcher was able to develop a very rich understanding of the research variables of interest and the study context (Huckman at al. 2009). The tradeoff of examining such rich data, of course, involves the degree of generalizability of the research findings beyond ADSSC. Future research is needed to assess the extent to which these findings are applicable to other public sector clients in the UAE. In addition, replications of this study in other contexts should prove to be of value.

This study has also a limitation on the design of the model which should be considered. The design of the model is not limited to a specific project type related to the public sector projects and consequently allows for broad application to any project portfolio within the Abu Dhabi public sector.

Coupled with within-case analysis is the cross-case for patterns search. These tactics allowed the researcher to overcome arriving at conclusions based the reality that humans are poor processors of information because they arrive at conclusions based on the influence of the vividness of information (Nisbett and Ross, 1980) or elite respondents (Miles and Huberman, 1984). The researcher implemented two different tactics as discussed in chapter 6. However, potential limitations could be with the interpretation of the study findings.

One limitation can also be in the small sample size of 10 project cases performed for one particular setting even though external validity was achieved, as discussed in chapter 3. With a larger sample size, and from testing for mediating or moderating interactions between variables, results can be more reliable. Another limitation of the sample was that it was done qualitatively and therefore was not able to estimate sampling error. In addition, generalizing findings to other contexts should be made with caution, since the sample was restricted to capital projects executed in the public sector in Abu Dhabi. This study is limited to the context of the UAE and therefore the results may only be considered valid in this particular context. Future research can collect data from other geographical locations to see whether the findings are replicated and to explore the influence of national culture on the relationship between Project Management Performance and Project Success.

Even though this research can improve the knowledge-sharing process, again some limitations will be present. First, the present study reposes on a qualitative study in public sector project teams. Generalization to the entire population of the phenomenon is not always possible; therefore, additional research is necessary to define how the results can be revised to account for other cases. Second, presence of the knowledge leaders is very important in the arrangement of strategies, and they also provide guidelines to team members to complete the strategies. Conversely, this study has not precisely investigated knowledge leaders' role in practices of knowledge management; upcoming research can possibly focus on the active and cross role of leaders that provide support to both group-level and individual-level learning processes (Viitala 2004). And finally, the main emphasis of this research is on knowledge leadership as a relational process. Knowledge-sharing outcomes can be highly influenced by the support of the knowledge leaders' behaviors in relational process. Additional research (e.g., a psychological study) might illuminate knowledge leaders' behaviors and results.

The empirical data were collected in the UAE; the results related to joint problem solving might also be of relevance to construction practitioners in other geographic areas that use similar procurement procedures that are transparent and fair. However, the scope of this analysis was narrowed down to the relational transaction practices of three major parties (i.e., public clients, main contractors, and lead consultants), without consideration of other parties' practices, such as suppliers and subcontractors, because these parties do not have direct interactions with public clients and are not included in the research scope. Nevertheless, it is realized that relational transactions require a holistic approach. The exclusion of subcontractors might be a limitation of this discussion.

Finally, organizational experience was operationalized based on the statements made by interviewees on the contractor's similar project executed previously. This was not based on the actual number of other prior projects initiated and completed since knowledge transfer and organization experience are expected to be based on number of projects initiated and executed. Therefore, since neither the number of previous project, initiation date nor the closure date are perfect measures of the opportunity for organizational knowledge transfer to occur, this has the potential to affect the results in a manner similar to measurement error. Such an effect may make it harder to observe statistical significance for organizational experience.

In conclusion, the qualitative research adopted in this study was found to be an effective approach in gathering specific information about the opinions, values, social contexts, and behaviours of the research from projects team members. This helped the researcher to achieve the research objectives by identifying how social, human, relational, and organizational forms of capital affect project success and then develop a conceptual model that incorporates intangible resources and project success in a public sector organization in Abu Dhabi. It provided in-depth information on the human side, which often has contradictory opinions, beliefs, behaviours, emotions, and relationships. Due to these mentioned points and to the exploratory nature of this research study, a qualitative approach was a good choice to make as it allowed the researcher to gain in-depth information, descriptions, deeper understanding, and an explanation of aspects related to intangible factors in the context of project management in a new geographical area such as Abu Dhabi. It was particularly suited for collecting data on the experiences, personal histories, and perspectives of the project team members, particularly when sensitive topics such as the intangible research factors of this

study are being explored. This topic is a sensitive topic, as it largely contains human, social, and relational aspects. The attitude towards the author of this thesis was very friendly and open. However, for other researchers who are willing to work in this research context, it has to be highlighted that getting access to the region and units of analysis requires a lot of patience, since the societies in the Middle East are in the process of tremendous change. It may be that in a few years, organizations in the region will be more open to research in this direction. For example, cultural barriers can create tremendous difficulties in complex projects. This research was complex in that it dealt with data that not everyone was comfortable sharing. In some cases, reluctance to share negative lessons for fear that they might not be viewed as good project managers and therefore reliability of data might have been influenced. This can be viewed as one of this study limitation.

### **9.3 Future Research**

In addition to empirically extending the project management theory and reacting to the literature gaps discussed in chapter 2, there are several key research implications gained from this study. The different effects of intangible resource factors in the setting provide more evidence for the conjecture (Pinto 2002) that factors contributing to project success are not necessarily generic. By separately considering project outcomes, studies may be able to provide strong evidence that various factors of a project may not be equal drivers of project success criteria. This highlights the fact that there is a need to review the common practice of aggregating project outcomes into one global measure by researchers. This will allow for a detailed differentiation of project success factors.

Additionally, considering a sample size of ten cases, further research is recommended using a larger sample. For example, 10 cases from each of the ADEWA entities (ADSSC, ADDC, TRANSCO, etc.) can provide good sample covering projects related to Abu Dhabi utility sectors.

Furthermore, the exploration of mediating, moderating, and using structural equation modelling for outcome path analysis interactions may result in new findings. It is also recommended to conduct future project research in other settings in different sectors. A broader comparative range of exploration of project success criteria, including important soft outcomes from the project team and client satisfaction, is also recommended. Such future research studies should be undertaken while developing and identifying additional intangible resource factors. For example, the results of this study may not hold outside of the public sector context. Models can be separately developed in future studies for each of the project

outcome measures, as they have been used in this study. Similarly, future models should be extended to include soft factors such as knowledge creation management and organisational learning. Furthermore, there are few research results available in the area of Middle East project management. There is a need to perform further investigations in the region. There are also many other areas that need to be investigated further. In the future there may be more research results available that can provide a larger basis for empirical data and research results.

Another future work can be on providing empirical evidence that supports the expectation of gaining significant benefits from knowledge leadership and reveals the importance of adopting knowledge leadership to improve knowledge sharing. Such evidence can add to the literature in two valuable ways. First, validate a framework for assessing the associations among knowledge leadership, social capital, and knowledge sharing, and to provide implications for team knowledge leadership. Second, offer important results on identification of the mediating role of social capital in the relationship between knowledge leadership and knowledge sharing. A new research result is required to suggest that knowledge leadership is positively associated with social capital and plays an important role in developing and accumulating social capital. The empirical results of such a future study can be compared with Mabey et al. (2012) who considered that knowledge leadership was of great importance to shaping the strategic actions to help create social capital. The results can also be compared with McCallum and O'Connell (2009), who argued that the development of knowledge leadership established social capital by helping their subordinates coordinate with each other, forming a shared understanding, and developing an extended social network.

Previous research studies along with this research study show how important top management is to project performance. Still, the main limitation of these studies was inadequate types of project that were tested. Those cases also make available good evidence that supports top management support as the most important CSF. For other types of projects more evidence is needed. Also, evidence that has to be demonstrated in future studies is that top management support will be recognized as even more important for inter-organisational projects if there is a relationship between project success and organizational change. In order to be sure that top management support is the most important for other types of projects as well, future studies or precisely meta—studies should be performed. Such research can provide significant implications for board, senior management and project management practice and academia. Boards, top managers and their advisors may also have to accept that

the current expert advice has less impact on success than previously believed because a business rather than a project/technical focus is required.

The finding of this study related to motivation misalignment increases the generalizability of Rose and Manley's (2012) results to the project management in the public sector in the UAE. Achieving the generalizability of the results is important because aligning the motivation of contractors and consultants to perform better than 'business-as-usual' on a public sector project is a complex undertaking and the costs of failure are high as misalignment can compromise project outcomes. However, despite the potential benefits of effective alignment, there is still little information about optimally designing procurement approaches that promote motivation towards 'above business-as-usual' goals. Beside the work of Rose and Manley (2010) a future work can also contribute to this knowledge gap by examining the negative drivers of motivation in a public sector project in the UAE that, despite a wide range of performance enhancing incentives, failed to exceed business-as-usual performance.

To sum up, there are avenues open for more empirical studies and additional perspectives. The field still lacks in-depth case studies, studies in real time, and studies of processes. Such studies will be useful in developing theories for a better understanding of fundamental project issues.

#### **9.4 Personal Development as a Researcher**

Prior to the start of this research, the researcher worked as a professional in the field of project management for seven years. The researcher also worked with public sector projects for more than five years and with some experience in managing various projects with different scopes. This research enabled the researcher to channel his qualitative skills in analysing business issues and to open up new avenues in his research skills. The experiences gained while working on this study have made the researcher a person with a broader point of view. The process undertaken throughout the study afforded the researcher a fuller perspective and a good understanding of project management. Interaction with people at the levels of the organisation has given the researcher the opportunity to understand the functioning of business as well as important issues connected with the industry. This fascinating and valuable experience transformed the researcher's interests in research into a passion. The researcher gained valuable insights into the environment of a company's operations, how they affect and are affected by this environment. The researcher was able to observe both efficient and inefficient methods of running a project. The time limitation on each phase of the project taught the researcher to plan well, work systematically, and keep reports up-to-date. Also,

having to defend the analyses and recommendations, during internal discussions and presentations, has taught the researcher to think rigorously and creatively.

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## Appendix 1: List of potential cases gathered for selection process

No	CR. No	Status	Project Scope	Contract Type	Contractor	Original Cont. Value (AED)	Revised Contract value (AED)	Actual Project Duration	Original Project Duration	CPI	SPI
1	O-1075	PAC	TSE Lines from 6 MIG Reservoir at Al Maqam Interchange to Various Locations	Consultancy	AECOM	15063000	23126338	48.00	50.00	0.65	0.96
2	O-1426	PAC	TSE Lines from 6 MIG Reservoir at Al Maqam Interchange to Various Locations	Contracting	NBH	142724875	190560519	15.00	25.00	0.75	0.60
3	G-4127	PAC	Design and construction of Al Wathba Enhanced TSE Treatment	Consultancy	AECOM	60982453	60982453	18.00	29.00	1.00	0.62
4	O-1755	PAC	Design and construction of Al Wathba Enhanced TSE Treatment	Contracting	Boustead Salcon	55111811	55111811	9.00	21.00	1.00	0.43
5	O-1081	PAC	Sewerage Connections and Related Works for Isolated Properties in Abu Dhabi Emirate (excluding Al Ain	Consultancy	DORSCH	51950000	57875079	9.00	12.00	0.90	0.75
6	O-1185	PAC	Sewerage Connections and Related Works for Isolated Properties in Abu Dhabi Emirate (excluding Al Ain	Contracting	Al Jabir	180000000	180000000	42.00	120.00	1.00	0.35
7	O-1248	PAC	Hameem Development - Zonescorp Construction of Sewerage Network and Pumping Station	Consultancy	HYDER	64276000	64276000	9.00	11.00	1.00	0.82
8	O-1673	PAC	Hameem Development - Zonescorp Construction of Sewerage Network and Pumping Station	Contracting	ADMAC	92100000	92100000	12.00	15.00	1.00	0.80
9	O-1276	PAC	Construction of TSE Transmission Pipe Line Mafraq To Al Wathba	Consultancy	PARSONS	9436400	22998826	9.00	10.00	0.41	0.90
10	O-1651	PAC	Construction of TSE Transmission Pipe Line Mafraq To Al Wathba	Contracting	GCC	50000000	58000284	9.00	15.00	0.86	0.60
11	G-4053	FAC	Zafrana MBR Treatment Plant	Contracting	Metito	44852145	92687145	11.00	18.00	0.48	0.61
12	G-4137	FAC	Zafrana MBR Treatment Plant	Consultancy	AECOM	4628429	4628429	16.00	28.00	1.00	0.57
13	O-1075	FAC	Sewerage Connection and Related works for Isolated Properties in Al Ain Region, Phase 2	Consultancy	AECOM	23126338	23126338	9.00	10.00	1.00	0.90
14	O-1359	FAC	Sewerage Connection and Related works for Isolated Properties in Al Ain Region, Phase 2	Contracting	NBH	44500000	53400000	19.00	20.00	0.83	0.95
15	O-1030	FAC	Electro-mechanical Works for East Extension of Khalifa Town A.	Consultancy	DORSCH	329000	329000	9.00	14.00	1.00	0.64
16	418M	FAC	Electro-mechanical Works for East Extension of Khalifa Town A.	Contracting	DAFF	3756916	3756916	24.00	35.00	1.00	0.69
17	O-1019	FAC	Urgent Miscellaneous Sewerage and Storm Water Works at Baniays, Al Wathba, KTA, Al Ghantoot and Al Khatim	Consultancy	DORSCH	3936691	3936691	12.00	15.00	1.00	0.80
18	452	FAC	Urgent Miscellaneous Sewerage and Storm Water Works at Baniays, Al Wathba, KTA, Al Ghantoot and Al Khatim	Consultancy	MABANI	35188462	35188462	12.00	16.00	1.00	0.75
19	O-1035	FAC	Miscellaneous Sewerage and Surface Water Drainage in Abu Dhabi and Mussafah	Consultancy	HYDER	8260395	8260395	12.00	18.00	1.00	0.67

No	CR. No	Status	Project Scope	Contract Type	Contractor	Original Cont. Value (AED)	Revised Contract value (AED)	Actual Project Duration	Original Project Duration	CPI	SPI
20	G-4130	FAC	Miscellaneous Sewerage and Surface Water Drainage in Abu Dhabi and Mussafah	Consultancy	ADMAC	24000000	24000000	36.00	36.00	1.00	1.00
21	M35	FAC	UPGRADING OF MAIN SEWAGE TREATMENT PLANT, AL AIN	Consultancy	KEO	7396673	7396673	24.00	24.00	1.00	1.00
22	M35	FAC	UPGRADING OF MAIN SEWAGE TREATMENT PLANT, AL AIN	Contracting	NBH	68338653	79452079	36.00	53.00	0.86	0.68
23	G-4140	FAC	Construction of trunk sewers and associated treated effluent system for Al SAAD WWTP (LOT A)	Consultancy	PARSONS	23613991	33547127	39.00	64.00	0.70	0.61
24	O-1086 A	FAC	Construction of trunk sewers and associated treated effluent system for Al SAAD WWTP (LOT A)	Consultancy	Al Jabir	516336284	518477612	24.00	35.00	1.00	0.69
25	O-1065	Closing	Consultancy Services for the Construction Supervision of Contract No. 830	Consultancy	ACE	1343500	1343500	16.00	27.00	1.00	0.59
26	O-1024	Closing	Consultancy Services for the Continuation of Construction Supervision for ADSSC Contract No. 142/22	Consultancy	HYDER	260500	260500	18.00	30.00	1.00	0.60
27	142/22	Closing	Miscellaneous Urgent Works - Phase 19 Contractor: PACT	Consultancy	HYDER	20000000	20000000	18.00	29.00	1.00	0.62
28	O-1028	Closing	Consultancy Services for the Continuation of Supervision during Maintenance Period for ADSS Contracts 147/9, 186/3,142/20, 142/21 and 142/23 and Finalisation of ADSS Contracts 220, 222 and 223	Consultancy	HYDER	827100	827100	18.00	31.00	1.00	0.58
29	O-1015	Closing	Consultancy Services for the Continuation of Construction Supervision for ADSS Contract No. 142/24	Consultancy	HYDER	7306317	7306317	18.00	25.00	1.00	0.72
30	O-1023	Closing	Consultancy Services for the Continuation of Construction Supervision for ADSS Contract No. 142/26	Consultancy	HYDER	1184591	1184591	18.00	36.00	1.00	0.50
31	M57	Closing	Consultancy Services for Al Khazna Tannery Wastewater Treatment Plant	Consultancy	KEO	779184	779184	12.00	19.00	1.00	0.63
32	O-1904	Closing	Construction of Sewerage Connections and Related Works in Abu Dhabi Island and Main Land - Phase III - Termination for Contractor: Hedley	Consultancy	AECOM	80000000	80000000	18.00	18.00	1.00	1.00
33	M44/1	Closing	Consultancy Services for Electro-Mechanical Works Refurbishments For Lifting Stations-Phase II	Consultancy	AECOM	5740929	5740929	16.00	17.00	1.00	0.94
34	O-1190	Closing	Sewerage Connections and Related Works for Isolated Properties in Al Ain Region	Consultancy	AECOM	120000000	120000000	16.00	22.00	1.00	0.73
35	O-1105	Closing	Construction of Pumping Station and Pressure Main for the ZonesCorp Labourer Houses in F2 area at Mafrq	Consultancy	AECOM	46360970	121899420	16.00	17.00	0.38	0.94
36	O-1042	Closing	Consultancy Services for the Construction Supervision for Contract No. O-1044	Consultancy	PARSONS	2097000	2097000	12.00	17.00	1.00	0.71
37	G-4220	Closing	Consultancy Services for the Construction Supervision of Contract No. 817	Consultancy	PARSONS	3414040	3414040	18.00	30.00	1.00	0.60
38	O-1025	Closing	Consultancy Services for the Continuation of Construction Supervision for ADSS Contract No. 319M	Consultancy	KEO	301163	301163	12.00	20.00	1.00	0.60



No	CR. No	Status	Project Scope	Contract Type	Contractor	Original Cont. Value (AED)	Revised Contract value (AED)	Actual Project Duration	Original Project Duration	CPI	SPI
39	O-1026	Closing	Consultancy Services for the Construction Supervision of Contract No. 409M	Consultancy	DORSCH	472872	472872	6.00	9.00	1.00	0.67
40	O-1041	Closing	Consultancy Services for the Construction Supervision of Contract No. O-1049	Consultancy	DORSCH	2561433	2561433	12.00	13.00	1.00	0.92
41	O-1044	Closing	Construction works to complete outstanding works under ADSSC Contract 502/11M (Sewerage and Surface Drainage Works (MandE)	Consultancy	PARSONS	4913763	4836859	12.00	18.00	1.02	0.67
42	O-1089	Closing	Consultancy Services for the Continuation for supervision during Maintenance period for ADSS Contract No. 728, 731, 716, 727 and 717	Consultancy	MWH	555188	555188	12.00	19.00	1.00	0.63
43	O-1149	Closing	MAFRAQ WWTP CAPACITY ENHANCEMENT	Contracting	PARSONS	44904258	51004258	15.00	18.00	0.88	0.83
44	O-1043	Closing	Consultancy Services for the Construction Supervision for ADSSC Contract 502/14 (O- 1047)	Consultancy	PARSONS	2362500	2362500	12.00	14.00	1.00	0.86
45	O-1021	Closing	Consultancy Services for the continuation of construction supervision for ADSSC contract No. 512/5A	Consultancy	PARSONS	3183255	3183255	18.00	23.00	1.00	0.78
46	O-1020	Closing	Consultancy Services for the continuation of construction supervision for ADSSC contract No. 502/12M	Consultancy	PARSONS	3441476	3441476	12.00	14.00	1.00	0.86
47	O-1141	Closing	Package MBR WWTP for ZonesCorp Labour Housing F1and F2, Mafraq and Zakher	Consultancy	AECOM	79977000	125315451	12.00	15.00	0.64	0.80
48	142/24	FAC	SEWERAGE WORKS FOR SECTORS E19/02, E25 and E48 [Al Shamkha Phase 4 and Miscellaneous Works]	Consultancy	ADMAC	16884011	36804011	12.00	16.00	0.46	0.75
49	142/26	FAC	SEWERAGE AND SURFACE WATER WORKS AT ABU DHABI and MUSSAFAH – PHASE 20	Contracting	Al Hamed	30000000	30000000	24.00	51.00	1.00	0.47
50	O-1100		Construction of Sewerage force Mains from Madinat Zayed Development to Madinat Zayed WWTP and from Ghayathi Development to Ghayathi WWTP	Contracting	Code	27777000	27777000	8.00	8.00	1.00	1.00
51	830	FAC	Sewerage and Surface Water Drainage Networks and Rectification works at Mohammad Bin Zayed Residential City	Contracting	NBH	36500000	36500000	24.00	36.00	1.00	0.67
52	O-1022	Closing	Consultancy Services for the Continuation of Construction Supervision for ADSS Contract No. TRIP 2016	Consultancy	HYDER	577004	577004	12.00	15.00	1.00	0.80
53	445	FAC	Storm Water Drainage at Raha Beach	Contracting	MABANI	16195000	16195000	12.00	12.00	1.00	1.00
54	G-4127	FAC	Construction of Pumping Station and Pressure Main for the ZonesCorp Labourer Houses in F2 area at Mafraq	Consultancy	AECOM	58391000	60982453	60.00	90.00	0.96	0.67
55	G-4002	FAC	Drainage for Isolated Properties in Al Ain	Contracting	NBH	32800000	44921641	24.00	24.00	0.73	1.00
56	M41/3	FAC	Drainage for Isolated Properties in Al Ain	Consultancy	AECOM	3785522	3785522	12.00	13.00	1.00	0.92
57	O-1141	FAC	Package MBR WWTP for ZonesCorp Labour Housing F1and F2, Mafraq and Zakher	Consultancy	Concorde	79977000	125315451	11.00	15.00	0.64	0.73
58	409M	FAC	Miscellaneous Pumping Stations at Al Mafraq, Raha Beach and Emergency Bypass Works	Contracting	DAFF	3148961	3148961	16.00	24.00	1.00	0.67

No	CR. No	Status	Project Scope	Contract Type	Contractor	Original Cont. Value (AED)	Revised Contract value (AED)	Actual Project Duration	Original Project Duration	CPI	SPI
59	418M	FAC	Electro-mechanical Works for East Extension of Khalifa Town A.	Contracting	DAFF	3756916	3756916	24.00	39.00	1.00	0.62
60	319 M	FAC	M/E Works for Raising Capacity OF STP and Irrigation Works in Delma Island	Contracting	DAFF	5483483	5957578	15.00	25.00	0.92	0.60
61	M44/1	FAC	ELECTRO-MECHANICAL WORKS REFURBISHMENTS FOR LIFTING STATIONS	Contracting	Bin Ham	48670492	48670492	48.00	75.00	1.00	0.64
62	3/1/180/1-2	FAC	Upgrading Al Salam Street - Contract no.2	Contracting	ADMAK	16188000	16550117	26.00	40.00	0.98	0.65
63	Nov-08	FAC	Re-construction of Mafrq I/C	Contracting	Al Jabir	16550117	16550117	24.00	39.00	1.00	0.62
64	J2G313	FAC	Roads in Mafrq City (F2 and F1)	Contracting	Al Jabir	56211000	60982453	6.00	10.00	0.92	0.60
65	502/12M	FAC	Rehabilitation Works for 28 nos. Pumping Stations Outside and Inside Abu Dhabi Island (civil and MandE works)-Phase 2	Contracting	Metito	21985501	21985501	24.00	38.00	1.00	0.63
66	512/5A	FAC	Automatic Remote Control, Supervision and Interconnection through Fiber Optic Network – Phase 2	Contracting	Bin Ham	12400787	12400787	24.00	37.00	1.00	0.65
67	502/12M	FAC	Rehabilitation Works for 28 nos. Pumping Stations Outside and Inside Abu Dhabi Island (civil and MandE works)-Phase 2	Contracting	Metito	21985501	21985501	24.00	38.00	1.00	0.63
68	317	FAC	Miscellaneous Sewer Works at Marfa, Madinat Zayed and Liwa	Contracting	ADMAC	25499816	25499816	18.00	28.00	1.00	0.64
69	817	FAC	Sewerage and Surface Water Drainage Networks and Rectification works at Mohammad Bin Zayed Residential City	Contracting	ADMAC	48614691	48614691	24.00	40.00	1.00	0.60
70	O-1280	FAC	Design, Supply, Execution and OandM for one year of new Odour Control System for Pump Station 5 and 5A	Contracting	Envicon	7810000	7810000	24.00	39.00	1.00	0.62
71	505/5	FAC	SEWERAGE CONNECTION TO 322 VILLAS AT AL DHAFRA AIR BASE AREA	Contracting	MABANI	25845958	25845958	18.00	30.00	1.00	0.60
72	M41/2	FAC	Drainage for Isolated Properties in Al Ain	Contracting	NBH	27525029	27525029	18.00	32.00	1.00	0.56
73	804/1	FAC	Mussafah East Sewerage Main Pumping Station MPS-17 Pressure Line Contract	Contracting	ADMAC	15024250	15024250	24.00	38.00	1.00	0.63
74	726	FAC	Sewerage of Al Shamkha Phase 4 and Miscellaneous Works	Contracting	NBH	22814858	22814858	36.00	56.00	1.00	0.64
75	142/22	FAC	MISCELLANEOUS URGENT WORKS – PHASE 19	Contracting	PACT	19110858	19110858	24.00	36.00	1.00	0.67
76	308M	FAC	Liwa M and E Works	Contracting	Metito	14471713	14471713	36.00	58.00	1.00	0.62
77	O-1191	FAC	Construction of Sewerage Schemes for Al Shawamekh, Al Shahama, Al Bahya, Al Sader and Trunk Sewer of Falah and Al Shamkha, Stage3	Contracting	NBH	161678510	161678510	24.00	38.00	1.00	0.63
78	186/3	FAC	Emergency by Passes to Main Sewage Pumping Stations	Contracting	MACE	27267390	27267390	18.00	29.00	1.00	0.62
79	O-1262	FAC	Sewerage connections and related works for isolated properties in the Western Region	Contracting	Tecton Engg.	72000000	72000000	24.00	38.00	1.00	0.63
80	O-10525	Closed	Design and Construction of Razeen Labour City Wastewater Treatment Plan	Contracting	Besix Sanotec	50469213	50469213	15.00	16.00	1.00	0.94
81	O-1692	Closed	Construction Work for Upgrading of Ghayathi Wastewater Treatment Plant and TSE Pumping Station and Pressure Mains	Contracting	Al Nasr	78500148	78500148	15.00	24.00	1.00	0.63
82	O-1086B	Closed	(Construction of Trunk Sewers and Associated Treated Effluent System for Al Wathba (Lot 'B')	Contracting	ADMAC	723073060	842073045	18.00	39.00	0.86	0.46

No	CR. No	Status	Project Scope	Contract Type	Contractor	Original Cont. Value (AED)	Revised Contract value (AED)	Actual Project Duration	Original Project Duration	CPI	SPI
83	O-1484	Closed	Construction of Sewer Connection and Related works in Abu Dhabi Island and Mainland Phase II	Contracting	ADMAC	117379796	128995305	24.00	29.00	0.91	0.83
84	O-1434	Closed	Al Ain Asset Enhancement Scheme - Construction of Trunk Sewer Network and TSE Infrastructure – Part 1	Contracting	GCC	74926278	74926278	24.00	29.00	1.00	0.83
85	O-1463	Closed	Construction Works Associated With Replacement of Existing AC Sewer Lines At Abu Dhabi Island – Category-A	Contracting	LINDENBERG EMIRATES LLC	116026700	116026700	30.00	50.00	1.00	0.60

## Appendix 2: Case Interview Transcripts Summaries

### Case 1: Summary of Interviews Transcripts of Case 1 (Project O-1175)

Category/RQ	Interview Question	Interview transcript [Client PM - Black, Consultant PM - Blue, Contractor PM - Green]	Initial coding framework	Supporting Evidence
Human Capital  Research Question 1	How the experience had an influence on project success?	<ul style="list-style-type: none"> <li>-they have done similar projects in Singapore only</li> <li>-yes. They did not have a local experience.</li> <li>-Key people of the project had no local experience.</li> <li>- the contractor had to do certain requirements and process necessary to start the execution which they were not aware of.</li> <li>-The contractor was not fully aware of our policies even though they signed the contract when it was awarded to them.</li> <li>- Negative one: contractor is new to the area with no local experience and even presence.</li> <li>- this was their first project here so prior to this project they lacked the local experience</li> <li>- no experience here prior to the project.</li> <li>- yes, that took time from the contractor to fulfill</li> <li>- this was the first project we did in UAE.</li> <li>- All team members were brought from Singapore to work on this project so we were all new to the area.</li> <li>- requirements and procedures were not clear at the start of the project so it took time from us to provide. It would have been better if those requirement provided guidelines on how to follow them</li> </ul>	<ul style="list-style-type: none"> <li>• local technical experience</li> <li>• Team new to the area</li> <li>• Contractor local experience</li> <li>• No Innovative ideas for the team to become more effective and efficient</li> <li>• No innovation in organization of acquired knowledge</li> <li>•</li> </ul>	<p>Progress meeting No 5: “registering the branch office in Abu Dhabi is still under progress and not completed” and “BSWS were reminded that advanced payment will only be released after establishing the official branch in AD”</p> <p>Progress Meeting No. 5: “ADSSC advised extreme concerns at the lack of progress and understanding of ADSSC procedure by the contractor”</p> <p>Progress Meeting No. 5: “ADSSC advised extreme concerns at the lack of progress and understanding of ADSSC procedure by the contractor” and “with more than 8 weeks of the 9 months duration, a major concern is that BSWS mad no progress up to date and displayed lack of knowledge in ADSSC contract procedures and local municipality processes and procedure in particular”. Progress Meeting No.14:” BSWS were reminded again to the slow progress and adherence to ADSSC requirement and procedure”</p> <p>Progress Meeting No. 13: “Progress: Project Time Elapsed is 41.9% from the 9 month EPC contract duration”. Work progress is 10\$ only</p>
	How Planning capability had an influence on project success?	<ul style="list-style-type: none"> <li>-the contractor had to do certain requirements and process necessary to start the execution which they were not aware of.</li> <li>-The contractor was not fully aware of our policies even though they signed the contract when it was awarded to them.</li> <li>-we had a MAJOR issue at the start of the project which was connecting electricity to the project which heavily affected the execution of the project</li> <li>-they were not aware that they need insurance for design and head office did not know how to estimate for the insurance.</li> </ul>	<ul style="list-style-type: none"> <li>• Planning Capability is weak</li> <li>• No Team Support via organization of team process.</li> <li>• slow progress</li> </ul>	<p>Construction Meeting No. 5: “HSE plan reviewed by ADSSC and still found to be made generic despite the previous reminders. and Progress Meeting No.13: “AECOM express deep concern that contractor has not yet submitted application for permanent power connection and need to be expedite”</p> <p>Pre-Construction Meeting: “points of concerns</p>

		<p>-it was too weak. They did not have even knowledge on the undertaken and non objection letters to be obtained and the local sponsor did not know them.</p> <p>- the planning was effected if the requirement and procedure were not 100% known. This will cause a delay in the execution</p> <p>- the temp electricity contributed to the delay of the project. I would say that the cause was bad planning including risk planning.</p> <p>- the time planned for this work was not very accurate as process and procedure here are lengthy and too complicated</p> <p>- if we were aware of the procedures here ahead of time we would have made a better planning to shorten the time</p>		<p>raised by ADSSC: slow site progress by contractor, not submitting approved HSE plan, method statement not yet approved, safety officer not yet approved</p> <p>Progress Meeting No.5: "BSWS were reminded that getting permanent power connection is a lengthy process and they should start early to avoid project handover delay"</p> <p>Progress Meeting No. 5: "ADSSC advised extreme concerns at the lack of progress and understanding of ADSSC procedure by the contractor" and "with more than 8 weeks of the 9 months duration, a major concern is that BSWS mad no progress up to date and displayed lack of knowledge in ADSSC contract procedures and local manucablity processes and procedure in particular"</p> <p>Progress Meeting No. 5: "ADSSC advised extreme concerns at the lack of progress and understanding of ADSSC procedure by the contractor" and "with more than 8 weeks of the 9 months duration, a major concern is that BSWS mad no progress up to date and displayed lack of knowledge in ADSSC contract procedures and local manucablity processes and procedure in particular"</p>
	How the project leadership had an influence on project success?	<p>- the leadership was not good at all</p> <p>- This is because the project leader has been changed during the project</p> <p>- He was technically weak and also his feedback</p> <p>- very weak technical skill</p> <p>-yes except the 2<sup>nd</sup> team leader as compared to the first one assigned. The 2<sup>nd</sup> team leader might even effected the project negatively.</p> <p>- the team leader problem solving ability was very bad</p> <p>-the team leader here and abroad they do not have the local experience. These people may have strong experience back home and maybe fit but when they come here the local experience is needed.</p> <p>- leadership was an issue on the project</p> <p>- project manager was changed during the project which disturbed the work progress.</p> <p>- you can not say leadership is always weak. To be a good leader you need good back up from the management otherwise not much can be achieved.</p>	<ul style="list-style-type: none"> <li>• PM is perceived to have weak Industry specific and local experience</li> <li>• No Technical Excellence in organization of accumulated technical experience</li> <li>• PM replacement</li> <li>• PM rejection</li> <li>• PM is perceived to negatively affect outcome</li> <li>• No Technical Excellence in nurture/in force technical practice</li> </ul>	<p>Progress Meeting No. 13: "proposed construction manager was rejected by AECOM and asked for alternative candidate to be submitted by BSWS"</p> <p>Progress Meeting No.13: "proposed construction manager was rejected by AECOM and asked for alternative candidate to be submitted by BSWS"</p>

			<ul style="list-style-type: none"> <li>No Technical Excellence in monitor technical excellence</li> <li>PM first project is here</li> <li>PM not available</li> <li>PM is perceived to disturb the work</li> </ul>	
	How team potency/efficacy had an influence on project success?	<ul style="list-style-type: none"> <li>project technicians were good interims of piping system, cabling system, installation and we did not encounter any problem during commissioning</li> <li>yes they had qc/qa engineer and his skill was fine</li> <li>the hands on people assigned for this project by the contractor were actually good</li> <li>our team has been trained and executed many projects before</li> </ul>	<ul style="list-style-type: none"> <li>Project team potency/efficacy is strong</li> <li>Industry-specific experience</li> <li>Team new to the area</li> <li>Learning ability</li> <li>Industry Specific Experience is valuable</li> </ul>	
	Why team potency/efficacy had an influence on project success?	<ul style="list-style-type: none"> <li>Not at all. They have done similar project and the issue as in problem solving</li> <li>The team has executed similar projects before in Singapore with same specification and capacities.</li> <li>it is always easier to learn when you have previous experience to build on</li> <li>the experience of our team doing similar projects helped in learning faster</li> </ul>		
Organization Capital Research Question 2	How motivation had an influence on project success?	<ul style="list-style-type: none"> <li>we actually had to motivate the contractor team. They were depending on the head office in Singapore which is was not close to them and was not close to the project.</li> <li>team was motivated</li> </ul>	<ul style="list-style-type: none"> <li>No Team leader Support via motivation</li> <li>Management support</li> </ul>	
	How training had an influence on project success?	<ul style="list-style-type: none"> <li>this team is already trained in this type of project so they only had to duplicate the work they have done before</li> <li>the team seemed to have good training and that is why they were not having any technical issues in the execution</li> <li>the company provide good training to its employee and the best way of training is the hands on training you receive while executing the work</li> </ul>	<ul style="list-style-type: none"> <li>Team is already trained technically</li> <li>Industry-specific experience</li> </ul>	
	How culture had an influence on project success?	<ul style="list-style-type: none"> <li>I think the company decided not to come again and execute more projects and have a stronger presence in the region. We felt that they are not willing to improve number of people here for support"</li> <li>I'm not sure about the culture</li> <li>well. Every company has a strategy</li> </ul>	<ul style="list-style-type: none"> <li>Organizational Culture is not positive</li> </ul>	
	How Organization Communication had an influence on project success?	<ul style="list-style-type: none"> <li>The only thing I can see was an issue is the communication between their project office here and the head office in Singapore.</li> <li>We had no issue with communication with the PMO team and we do not communicate with the head office. I think they had communication issue between the PMO and the head office</li> <li>communication with international company whose head office in Singapore was a</li> </ul>	<ul style="list-style-type: none"> <li>Communication is weak</li> <li>No Innovative solutions for issues and problems</li> <li>No technical Excellence in organization of</li> </ul>	

		<p>problem as they are not here in the project</p> <ul style="list-style-type: none"> <li>- the head office was in Singapore and team assigned was here so the communication was slow which effected the project</li> <li>-according to the policy, all approval and change of order had to be approved from head office which usually takes time</li> </ul>	<p>information communicated to/from customers.</p>	
	How Monitoring and Control had an influence on project success?	<ul style="list-style-type: none"> <li>- So no proper control from the head office for the procurement</li> <li>- for the major part of procurements, it had to come from the head office which caused a delay I think</li> <li>- procurement of materials was by the head office and I agree that this caused some delay to the project</li> </ul>	<ul style="list-style-type: none"> <li>• Weak internal control</li> <li>• No materials specification changes</li> </ul>	
	How Management Support had an influence on project success?	<ul style="list-style-type: none"> <li>- It seems to be that the office here was not getting good and enough support from the head office.</li> <li>- But the home office was delaying the material procurement. And this is was one of the major problems</li> <li>- The problem in this project was that all materials had to be procured from the head office and not by the PMO</li> <li>- the head office in Singapore were not utilizing the support given to them</li> <li>- The head office seemed to be that he was not giving enough support to the team here.</li> <li>- material procurement and delivery was bad</li> <li>- Their local sponsor seems to be not able to pay for the insurance and waiting for the head office to make the insurance payment which turned to be a big amount.</li> <li>- The local sponsor seems to be handling the finance and payment side with no technical and regulation knowledge.</li> <li>- we did not notice the support given to the team from the head office</li> <li>- there was a delay from head office from material procurements</li> <li>- we were getting support from the local sponsor and head office but it would have been better if more support were given</li> </ul>	<ul style="list-style-type: none"> <li>• Management support</li> <li>• Material delay</li> <li>• No Team Support via facilitation</li> <li>•</li> </ul>	<p>Progress Meeting No. 13: “ADSSC reminded BSWs that it is the contractor own risk if they procure materials not from approved supplier list” and Progress Meeting 23: ADSSC and AECOM displayed concern on materials submission delay</p> <p>Progress Meeting No.13: “ADSSC/AECOM displayed a major concern that the branch manager/ project manager did not appear to have full authority even though it was officially given to him. BSWs CEO confirmed that authority given but has to follow the company's policy as some decision has to be made by upper management”</p> <p>Progress Meeting No 23: “ADSSC and AECOM displayed concern on materials submission delay”</p>
Relation Capital  Research Question 3	How Relationship had an influence on project success?	<ul style="list-style-type: none"> <li>- Governmental projects should be given special care and not to put so much restriction from other associated entities in order to move and execute the projects</li> <li>- So we should have some sort of standard agreed with the supply department and other associated entities for the specifications.</li> <li>- the team suffered a lot as they have not done a project before here so they had to develop the relationship with all entities and know and meet the requirements of each. I think the tem suffered a lot from this factor and got fed up.</li> <li>- this is a pilot project which is not a typical project. So we are talking about a new exercise.. this is a major point. When you have a typical project, steps and processes are well known. So this project is entirely different that other typical projects we execute such as adding new pipe line network or pumping station. This is a pilot project not an ordinary project. So all support from all entities is needed to move and execute the project. For example, water, electricity, end user supports are all needed.</li> <li>-I think that ADSSC and ADDC should have common understanding for specification and standard.</li> <li>- So we should have some sort of standard agreed with the supply department and other associated entities for the specifications.</li> </ul>	<ul style="list-style-type: none"> <li>• Weak relationship</li> <li>• PM technical specifications of DBs, transformers is perceived weak</li> <li>• Industry-specific experience</li> <li>• local technical experience</li> </ul>	<p>Progress Meeting No. 5: “BSWS were reminded that getting permanent power connection is a lengthy process and they should start early to avoid project handover delay”</p> <p>Progress meeting no.14:” ADSSC displayed a major concern of the delay by the contractor to provide unititly service which will further delay the project</p> <p>Progress Meeting No. 14: “BSWS raised concern that their application for permanent power connection got declined and ADSSC to give supporting letter”. Project meeting no 23:” AECOM and ADSSC reminded and instructed BSWs to keep them informed and engaged with regards to dealing with</p>

		<p>-no previous relationship existed with ADDC to help in pushing the subject by the contractor</p> <p>-this was our first time to deal with ADDC. Getting approval from them was an issue which effected the handover</p>		<p>governmental entities and BSWs confirmed their commitment”</p> <p>Progress Meeting No. 14: “BSWS raised concern that their application for permanent power connection got declined and ADSSC to give supporting letter”</p>
<p>Social Capital</p> <p>Research Question 4</p>	<p>How Social had an influence on project success?</p>	<p>-his project team seems to be in good relation as they worked together in many other similar projects before and they come from same country and share same language</p> <p>- Communication between the team already built up and they fit together</p> <p>-he project team seems to be in good relation as they worked together in many other similar projects before and they come from same country and share same language</p> <p>- personal relationships between team member, consultant and contractor were all good</p> <p>- we maintain good relationship between our people and clients</p>	<ul style="list-style-type: none"> <li>• Team members connection</li> <li>• Relationship is strong</li> </ul>	
<p>Human Capital</p> <p>Research Question 1</p>	<p>How Team Structure had an influence on project success?</p>	<p>- Team structure was ok from the technicians’ side, QA/QC engineer, HSE engineer. Technicians were very much aware of what they were doing. The subcontractor assigned for the project for the excavation activities was also good. The resources of the contractor were fit for the purpose.</p> <p>- the team structure was ok from all sides</p> <p>-the team members assigned was good and professional</p>	<ul style="list-style-type: none"> <li>• Team structure is strong</li> </ul>	



## Case 2: Summary of Interviews Transcripts of Case 2 (Project O-1149)

Category/RQ	Interview Question	Interview transcript [Client PM - Black, Consultant PM - Blue, Contractor PM - Green]	Initial coding framework	Supporting Evidence
Human Capital  Research Question 1	How the experience had an influence on project success?	<p>-due to the high skilled new work for the screen of the treatment plan outside the scope was given to them as we found them well experienced team”</p> <p>-The team experience was excellent which enable them to execute project successfully and smoothly”</p> <p>-Team members have strong technical skills as they are specialized in this type of work”</p> <p>-strong technical skill was the main driver for project success”</p> <p>-Strong technical competencies developed maybe due to good training. The Team was effective”</p> <p>-the team was very good and had many years of experience as the company was specialized in this type of work”</p> <p>-when a team has good experience that means their technical skill is high”</p> <p>-the team is a very strong time with so many years of experience”</p> <p>-this is a pure technical work so the project team technical skill should be high and it was high”</p>	<ul style="list-style-type: none"> <li>Team is perceived to have good industry-specific experience</li> <li>project team is perceived to be strong</li> <li>Good team planning ability</li> <li>Successful project</li> <li>Many years of working together</li> <li>Technical intensive project</li> <li>previous long experience</li> <li>Experience with project-related activities</li> <li>facilitates amount and quality of information exchanged Scope increase</li> <li>experience of individuals</li> <li>Operational performance</li> <li>Organizational experience grows, individuals opportunities for to benefit from knowledge accumulated from</li> </ul>	<p><b>Progress Meeting 20:</b> PIL stated that the contractor needs to deploy more qualified resources with regards to safety. Concorde confirmed that enough resources shall be deployed if needed</p> <p><b>Progress Meeting 22:</b> PIL stated that the actual progress is 31% against scheduled progress of 100% and the contractor is 18 weeks behind schedule.</p>

			<ul style="list-style-type: none"> <li>others increase</li> </ul>	
	How was the team structure?	<p>-The technical Team had good and enough resources”</p> <p>-the way the team was structured was good”</p> <p>-every work was assigned to the member who is specialized and we had good number of people throughout”</p>	<ul style="list-style-type: none"> <li>team efficacy/potency is perceived to be strong</li> <li>knowledgeable member in the team</li> <li>more proficient individual</li> <li>task-related information and knowledge</li> <li>Team is perceived to have specialist members</li> </ul>	<b>Progress Meeting 20:</b> PIL stated that the contractor needs to deploy more qualified resources with regards to safety. Concord confirmed that enough resources shall be deployed if needed
	How the project leadership had an influence on project success?	<p>-project leadership might contributed to success but not as much as team experience”</p> <p>-the team was so strong to drive the project by themselves”</p>	<ul style="list-style-type: none"> <li>Project team was strong</li> <li>team is able to expedite the work</li> <li>experience prior to the current project</li> <li>specialist members</li> <li>experience of individuals</li> <li>Database</li> <li>proportional relation of experience and project success</li> </ul>	
	How problem solving ability had an influence on project success?	<p>-Due to team technical strength, they were able to solve technical issues and come up with an effective solution”</p> <p>-yes. The problem solving skill was good specially with solving technical issue”</p> <p>- “the more experience you have, the stronger your skill will be to solve problems which was the case in this project and all other projects we take”</p>	<ul style="list-style-type: none"> <li>Technical intensive project</li> <li>project database for experts opinion on issue</li> <li>Build upon and learn from prior mistakes</li> <li>mistakes in future improvement projects</li> </ul>	

			<ul style="list-style-type: none"> <li>• team-based problem-solving</li> <li>• Problem solving ability perceived to be strong</li> <li>• issues were “worked out” previously</li> <li>• effective routines for project improvement</li> <li>• organizational memory</li> <li>• Better sense to what works and what does not</li> </ul>	
	Is there any role for innovation?	-Not sure if innovation played any role as scope was clear from technical point of view”	<ul style="list-style-type: none"> <li>• No effect of innovation</li> </ul>	
Human Capital Research Question 2	How management support had an influence on project success?	-Management support was effective in approving variation and giving project extension” -management was from the client side and contractor side was good as they supported the team through out the project” -the client management support was excellent and our own management supported it throughout the project when there is a cost change”	<ul style="list-style-type: none"> <li>• Scope increase</li> <li>• management support is perceived to be strong</li> </ul>	
	How training had an influence on project success?	-Not sure if team received good training and development as this was not included in the prequalification criteria” -doing so many projects with the same nature is actually a good hands on training” -we give good amount of technical training to our team to develop their technical skill. We give specialized training with manufacturers we deal with”	<ul style="list-style-type: none"> <li>• knowledgeable member in a team</li> <li>• Knowledge sharing</li> <li>• Good training</li> <li>• access to prior project-related materials</li> <li>• documented learnings</li> <li>• Knowledge generated by other members</li> <li>• training is perceived to be strong</li> <li>• access to organizational experience</li> <li>• learning ability is perceived to be strong</li> </ul>	
	How the motivation factor had an influence on	-Team seems to be motivated to successfully complete the work on time. This was felt from their communication with us” -team was motivated”	<ul style="list-style-type: none"> <li>• Team is perceived motivated</li> <li>• performance-based</li> </ul>	

	project success?	- “our team was motivated throughout the project and we give appreciation letters and incentives ”	incentive mechanism available <ul style="list-style-type: none"> <li>• team receptive to improvement</li> <li>• Alignment of motivation to project objectives</li> <li>• appreciation letters to the team</li> <li>• encourage team members</li> <li>• above business-as-usual achieved</li> <li>• No procurement approaches to promote motivation</li> <li>• consistency between the project performance goals and incentive goals</li> <li>• fair and flexible incentive</li> <li>• performance measurement processes</li> <li>• performance-enhancing initiatives</li> </ul>	
	How the communication factor had an influence on project success?	-Excellent communication shown to ADSSC throughout the project.” Excellent communication was one of the main drivers for the project success” -communication was professional” -we pay so much attention to communication with either clients or our own team and we make sure all communication is clear to avoid any miscommunication that may affect our project”	<ul style="list-style-type: none"> <li>• Good communication</li> <li>• rational behaviour and cooperation are perceived to be strong</li> <li>• Interactional justice and reciprocity</li> <li>• Goal commitment</li> </ul>	
	How the monitor and control factor had an influence on project success?	-Internal control by ADSSC helped in putting project on track” -the internal control by the client and the contractor was good which made the project successful” -internal control is a very important part of the project. Through frequent meetings and strict schedule to follow we and good cost control, were able to do a very good project control”	<ul style="list-style-type: none"> <li>• Better problem solving</li> <li>• Better Internal control</li> <li>• Action at the early stage</li> </ul>	

			<ul style="list-style-type: none"> <li>• Knowledge sharing</li> <li>• just risk allocation</li> </ul>	
<p>Relation Capital</p> <p>Research Question 3</p>	How the relationship had an influence on project success?	<p>-Team might have previous relationship with governmental entities “</p> <p>-Strong relations with related governmental entities avoided delays”</p> <p>-project team has Good business conduct and professionalism with ADSSC”</p> <p>-they did not have problem with permit and approval and things wet good maybe due to good technical skill, knowing the regulations and good relationship with them”</p> <p>-we have a very strong relationship with all authorities involved and we know all steps and regulations to follow otherwise this project would have not been successful”</p>	<ul style="list-style-type: none"> <li>• Good team industry-specific experience</li> <li>• project on time</li> <li>• Better problem solving</li> <li>• team is able to expedite the work</li> <li>• team is perceived to be cohesive</li> <li>• Knowledge sharing</li> <li>• Good team member connection</li> <li>• previous long experience</li> <li>• Good communication</li> <li>• Good relationship</li> <li>• willingness to engage in a relationship</li> </ul>	
<p>Social Capital</p> <p>Research Question 4</p>	Social	<p>-Relationship between project team members looked very well which made project ran smoothly.”</p> <p>-I felt that there was Very good cooperation between project team members”</p> <p>- “no issue was seen during project so I guess all were ok”</p> <p>-our team been together for a very long time and relationship between them is strong so we did not have any problem that could have affected the project”</p>	<ul style="list-style-type: none"> <li>• Previous experience working together</li> <li>• Better problem solving</li> <li>• Team ability to expedite work</li> <li>• trust among team members</li> <li>• No coordination losses between team members</li> <li>• experience working</li> <li>• group identity</li> <li>• together</li> <li>• team cohesiveness</li> <li>• Good team</li> </ul>	

			environment <ul style="list-style-type: none"> <li>• Knowledge sharing</li> <li>• Good team member connection</li> <li>• previous long experience</li> <li>• Good communication</li> <li>• Good relationship</li> </ul>	
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### Case 3: Summary of Interviews Transcripts of Case 3 (Project O-1185)

Category/RQ	Interview Question	Interview transcript [Client PM - Black, Consultant PM - Blue, Contractor PM - Green]	Initial coding framework	Supporting Evidence
Human Capital  Research Question 1	How the experience had an influence on project success?	<ul style="list-style-type: none"> <li>- the team technical was weak in the sewerage projects”</li> <li>- they did not have previous experience in the sewerage so they lacked the technical competencies”</li> <li>- all of the team members were new to the sewerage industry and had little experience. The management wanted to go into this industry so this was our first project”</li> <li>- The project manager was qualified but his team was not qualified</li> <li>- the team responsible for the hands on work was weak and were not good enough to work”</li> <li>- as I mentioned, this was our first project and the team needed more similar project to build their competency and skill”</li> <li>- Because Al Jabir contracting company project in the sewerage industry is little”</li> <li>- So the team was not qualified enough to take a project in the sewerage industry”</li> <li>- it is all about bad management plus they took a miscellaneous project in the sewerage system they had no enough experience in as all of their project were in roads and bridges.</li> <li>- it was clear that the team assigned for this project did not have enough experience.</li> <li>- the factors that may affected the project negatively is no experience”</li> </ul>	<ul style="list-style-type: none"> <li>• Team is perceived to have low industry-specific experience</li> <li>• No experience with project-related activities</li> <li>• Know-How</li> <li>• information, skills, and expertise</li> <li>• no experience prior to the current project</li> <li>• Unsuccessful project</li> <li>• No Previous experience working together</li> <li>• Technical intensive project</li> <li>• Individual experience is perceived to be weak</li> <li>• No experience working together</li> <li>• No previous long experience</li> <li>• Team is perceived not to have specialist members</li> <li>• specialist members not available</li> <li>• no previous experience</li> <li>• weak Database</li> <li>• Weak management support</li> </ul>	<p>Progress Meeting 26: “ADSSC/DC displayed their concern that big number of work orders are still pending and suggested the contractor to devote experienced gangs to only focus on those pending work orders. Contractor agreed to implement the solution by next week” and Progress Meeting No 44: “DC stated that deviation from standard and specified quality are reordered frequently. Contractor was notified and a repair need to take place. “</p> <p>Progress Meeting 2: “temp safety officer proposed by contractor has been approved conditionally” and Progress Meeting 34: “DC stated that due to the lack of experience forman and skilled labours there is no significant progrerss”</p> <p>Progress Meeting 29: “ADSSC/DC displayed their concern for the lack of experienced forman and labours which caused delays and low performance. Contractor promised to follow with the top managment for support to resolve the issue.”</p> <p>Progress Meeting No 38: “DC stated that diviation from quality standard has been noticed and contractor was reminded to follow the quality standard” and Progress Meeting 41: “contrator stated that top managment is aware that experienced staff are required to do sewerage work as they have no experience in sewerage network”</p> <p>Special Meeting: “update given by contractor with regards to the suspension letter sent by ADSSC with regards to shcdule program, HSE staff, and experience skilled staff and forman.”</p> <p>Progress Meeting 14: “ADSSC advised that</p>

			<ul style="list-style-type: none"> <li>• proportional relation of experience and project success</li> <li>• Knowledge generated by other members is weak</li> <li>• knowledge is valuable</li> <li>• organizational memory</li> <li>• No access to organizational experience</li> <li>• access to prior project-related materials is weak</li> <li>• Team is perceived not to have specialist members</li> <li>• Unsuccessful project</li> <li>• Explicit knowledge</li> <li>• Tacit knowledge</li> <li>• Embedded knowledge</li> <li>• knowledge is property</li> </ul>	work progress is behind schdule and no further delay will be accepted"
	How was the team structure?	<ul style="list-style-type: none"> <li>- Al jabir contractor has enough resources"</li> <li>- In fact the contractor resources are very strong in terms of number</li> <li>- numbers and enough manpower were not a problem as the contractor has much manpower</li> </ul>	<ul style="list-style-type: none"> <li>• team structure is previewed weak</li> <li>• No knowledgeable member in the team</li> <li>Low project team efficacy and potency</li> <li>• No proficient individual</li> <li>• Goal commitment</li> </ul>	
	How the project leadership had an influence on project success?	<ul style="list-style-type: none"> <li>- The project manager was not qualified and his team was not qualified</li> <li>- the factors that may affected the project negatively is strong leadership was weak"</li> <li>- there was a delay in appointing the project manager which affected the project and make the start slow"</li> <li>- I joined the team a bit late after the start of the project. I had to put things in order and tried to squeeze the schedule". "This actually was my first project in the sewerage"</li> </ul>	<ul style="list-style-type: none"> <li>• Bad team industry-specific experience</li> <li>• No knowledgeable member in the team</li> <li>• Unsuccessful project</li> <li>• project not on time</li> <li>• Project Manager is</li> </ul>	Progress Meeting 35:" DC enquired AJES about the vacant position of Project Manager in this contract from last 4 months/ AJES promised that he will join the contract immediately"



			<p>perceived to be weak</p> <ul style="list-style-type: none"> <li>• No specialist members</li> <li>• No experience of individuals</li> <li>• Low project team efficacy and potency</li> <li>• Late contractor involvement</li> <li>• Inadequate price negotiation</li> </ul>	
	<p>How problem solving ability had an influence on project success?</p>	<ul style="list-style-type: none"> <li>- The problem solving ability was an issue"</li> <li>- the ability to learn was also weak"</li> <li>- the team does not seem to be motivated to learn so they improve in next project"</li> <li>- giving incentive to the team to learn could have improved their learning as they will be more motivated"</li> <li>- it was not so good. They used to just raise the problem and not trying to solve and that is it. For example, they will raise problem for any major or minor activities such as excavation</li> <li>- they were not motivated to solve problem"</li> </ul>	<ul style="list-style-type: none"> <li>• Problem solving ability perceived to be weak</li> <li>• No Build upon and learn from prior mistakes</li> <li>• mistakes in future improvement projects</li> <li>• issues might not "worked out" previously</li> <li>• weak team-based problem-solving</li> <li>• Motivation misalignment</li> <li>• Inconsistency between the project performance goals and incentive goals</li> <li>• Unfair and inflexible incentive performance measurement processes</li> <li>• No incentives</li> <li>• learning ability is perceived to be weak</li> <li>• Team not motivated</li> <li>• Know-How</li> <li>• effective routines for project improvement</li> </ul>	<p>Progress Meeting 58: "DC stated that AJES raised the problem very late considering the WO started more than one year such obstructions should be highlighted at the time of seeing out."</p> <p>-progress Meetin 28:ADSSC/DC displayed their concern that no action has been taken yet with regards to the solution promised by the contractor to solve the sudden reduction of manpower issue</p>

			<ul style="list-style-type: none"> <li>• documented learnings not available</li> <li>• No sense to what works and what does not</li> <li>• team not receptive to improvement</li> <li>• No performance-enhancing initiatives</li> </ul>	
	How potency and efficacy had an influence on project success?	<ul style="list-style-type: none"> <li>- the team experience was bad and therefore output and productivity was low”</li> <li>- They also had good communication and good relationship with the other entities but they used to get stuck when fulfilling the requirement of bank guarantees and or making required drawings as their experience with holding them back from doing so on time</li> <li>- they were not utilized in a proper way so they produce so it was a delay for us and for them”</li> <li>- experience was causing the team not to be affective and productive”</li> <li>- efficacy would have been better if good experience was available by our team. I agree”</li> </ul>	<ul style="list-style-type: none"> <li>• Project team efficacy and potency is very low</li> <li>• not able to facilitate amount and quality of information exchanged</li> <li>• Know-How</li> <li>• task-related information and knowledge</li> <li>• Organizational experience grows, individuals opportunities for to benefit from knowledge accumulated from others increase</li> </ul>	
	How planning capability had an influence on project success?	<ul style="list-style-type: none"> <li>- Planning was very weak.”</li> <li>- we had to conduct many progress meeting and give them guidelines in the planning but the problem is that they could not understand our guidelines and recommendation and their feedback was weak</li> <li>- their experience was effecting their planning ability”</li> <li>- this was our first project in the sewerage and planning gets improved as you execute more and more project of the same nature</li> </ul>	<ul style="list-style-type: none"> <li>• Weak team planning ability</li> <li>• No project database for experts opinion on issue</li> <li>• Weak management to review plan</li> </ul>	
Organization Capital Research Question 2	How management support had an influence on project success?	<ul style="list-style-type: none"> <li>- The team experience and management were weak.”</li> <li>- the home office support was very weak”</li> <li>- the management could not do much with regarding of appointing experienced staff for the project”</li> <li>- being part of a huge company, there will be support by the management of course</li> </ul>	<ul style="list-style-type: none"> <li>• team efficacy/potency is perceived to be weak</li> <li>• project team is perceived to be weak</li> <li>• Action at the late stage</li> </ul>	Progress Meeting 29: “ADSSC/DC displayed their concern for the lack of experienced formen and labours which caused delays and low performance. Contractor promised to follow with the top management for support to

		<p>but it would take longer time due to the processes involved”</p> <ul style="list-style-type: none"> <li>- But it is mainly because of bad management”</li> <li>- But the management was not there”</li> <li>- the project manager was in fact good but the company did not give him the required support.</li> <li>- The team experience and management were weak.”</li> <li>- The bank guarantee issue I consider it as bad management”</li> </ul>	<ul style="list-style-type: none"> <li>• Bank guarantee</li> <li>• management support is perceived to be weak</li> <li>• Risk management</li> <li>• Procurement strategy</li> <li>• Weak management to devote time</li> <li>• Weak management to follow up on results</li> <li>• realisation of benefits focus</li> <li>• Weak management to facilitate problems</li> <li>• Management support is a critical success factor</li> </ul>	<p>resolve the issue.”</p> <p>Special Meeting: “Al Jaber requested ADSSC for any engineer or officer to help them obtain permission from raod department specially with top priority and urgent work”</p>
	How training had an influence on project success?	- these training improve of course at least the labours are aware”	<ul style="list-style-type: none"> <li>• Good training</li> <li>• Training</li> </ul>	
	How ability to learn had an influence on project success?	<ul style="list-style-type: none"> <li>- it made some improvement but not to level needed</li> <li>- They took a lot of our effort to put them in track as far as ADSSC HS E standard and policy</li> <li>- yes. They all have taken but we did not notice that while executing the project</li> </ul>	<ul style="list-style-type: none"> <li>• team learning ability is perceived to be weak</li> <li>• Training</li> <li>• knowledge management systems</li> </ul>	
	How the motivation factor had an influence on project success?	- not motivated. They gave us problems all the time. We really suffered a lot in this project from these human factors”	<ul style="list-style-type: none"> <li>• Team is perceived not motivated</li> <li>• performance-based incentive mechanism unavailable</li> <li>• Problem solving ability is perceived to be weak</li> <li>• above business-as-usual not achieved</li> <li>• No performance-enhancing initiatives</li> <li>• no incentive for sharing information</li> </ul>	
	How the communication factor had an influence on	- their communication between each other and the relation was good”	<ul style="list-style-type: none"> <li>• Communication is perceived to be weak</li> </ul>	

	project success?			
	How the monitor and control factor had an influence on project success?	- It took so much effort from us to make them aligned to the internal control process as their people were not qualified enough for this project.	<ul style="list-style-type: none"> <li>Weak internal control</li> <li>Weak Project Manager</li> <li>Weak Project team</li> <li></li> </ul>	
Relation Capital Research Question 3	How the relationship had an influence on project success?	<ul style="list-style-type: none"> <li>- Third party such as municipality, specially traffic and POT, they sometimes are late to give us the permits"</li> <li>- the factors that may affected the project negatively is third party"</li> <li>- obtaining permission was a problem and delayed the project handover"</li> <li>- they used to rejected the submittals for any small thing and without giving guidance and explication so we had to make so many attempts till we finally got the approvals and this pushed back the handover date"</li> </ul>	<ul style="list-style-type: none"> <li>Relationship with other entities is weak</li> <li>Project performed low</li> <li>team not able to expedite the work</li> <li>coordination losses between team members</li> <li>Unsuccessful project</li> <li>Risk management</li> <li>Knowledge sharing is weak</li> <li>Know-How</li> <li>Inequitable risk profile</li> <li>Interactional justice and reciprocity</li> <li>exchange knowledge</li> </ul>	Progress Meeting 44:" ADSSC asked contractor and consultant to meet head of municipality lab to resolve the issue of the delayed permission"
Social Capital Research Question 4	How the connection between team members had an influence on project success?	<ul style="list-style-type: none"> <li>- the factors that may affected the project negatively is social relationship among the team</li> <li>- it was felt that the connection between the members was not so good and that made a tense environment which indirectly effected the project progress "</li> <li>- we try to maintain our relationship with our clients and our team when I came I did my best to improve it as there was issues"</li> </ul>	<ul style="list-style-type: none"> <li>Team members connection is perceived to be weak</li> <li>No group identity</li> <li>No trust among team members</li> <li>coordination losses</li> <li>team is perceived not to be cohesive</li> <li>team environment is perceived to be weak</li> <li>rational behaviour and cooperation are perceived to be weak</li> <li>Weak Knowledge</li> </ul>	

			sharing <ul style="list-style-type: none"> <li>Weak Knowledge sharing</li> <li>Know-How</li> <li>Not good team environment</li> <li>team tend to resist sharing their knowledge</li> <li></li> </ul>	
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### Case 4: Summary of Interviews Transcripts of Case 4 (Project O-1484)

Category/RQ	Interview Question	Interview transcript [Client PM - Black, Consultant PM - Blue, Contractor PM - Green]	Initial coding framework	Supporting Evidence
Human Capital  Research Question 1	How the experience had an influence on project success?	<p>-The team was good. They are able to follow the guidelines and standards without mistakes. I did not notice any issue with them but the problem is the number was low.</p> <p>- he was ok. They were able to meet the standard and follow the instructions.</p> <p>- competency and experience are needed of course but you cannot do much if the resources are less</p> <p>- team was good and met the standard. they met the quality we set in the project interim of work quality and HSE. the team was competent and had enough experience</p> <p>- my team was very competent. We executed many projects before. Mr. Sinan is one of the important member in the team and due his long experience. we got a very competent team and they have long years of experience</p>	<ul style="list-style-type: none"> <li>Project team is perceived to help project</li> <li>No mistakes</li> <li>Successful project</li> <li>team efficacy/potency is perceived to be weak</li> <li>problem solving ability</li> </ul>	Progress Meeting No. 7:" DC informed that QA/QC Engineer Mr. Sinan was interviewed by ADSSC on Sunday, 08.08.10 and found acceptable.
	How Planning capability had an influence on project success?	<p>- lack of resources again. The planning was bad.</p> <p>- if you plan well for the resources and equipment, you would have no problem with time. You will be able to finish the project without a delay.</p> <p>- enough resource again. good planning is important but you need to be able to implement the plan</p> <p>- we were trying to catch up the schedule. you plan but things do not go as per the plan sometime</p>	<ul style="list-style-type: none"> <li>PM managed lack of resources successfully</li> <li>Weak planning</li> <li>Perception of the situation</li> <li>Identification of the problem</li> <li>Preference ranking</li> <li>Problem solving ability is perceived to be weak</li> </ul>	<p>Progress Meeting No 6:"ADSSC have deep concerns for delaying the trial pits near Road crossing in the work orders Eastern Mangrove, E-30 and E-25 and requested ADMAC to increase their resources to complete investigation and start soil investigation immediately especially in Salam Street crossing at Eastern Mangrove/DC asked ADMAC to prepare Method Statements for NDM.</p> <p>Progress Meeting 11: "DC has concerns about Pipes delivery Schedule which is still being</p>

			<ul style="list-style-type: none"> <li>Team is perceived not to have enough resources</li> </ul>	<p>delayed by ADMAC.</p> <p>Progress Meeting 14: "ADSSC/DC expressed concerns for delays and slow progress of works in all areas by ADMAC. ADMAC should take every effort to speed up the works to make up lost time.</p> <p>Progress Meeting 16: "ADSSC instructed ADMAC to increase their resources to catch the program. ADSSC asked ADMAC to commence work in all areas without delaying</p> <p>Progress Meeting 18: "ADSSC again requested to increase resources and open new areas without delay and asked how ADMAC is going to catch up the back log of the actual progress to planned and asked how many groups are working in each area. ADMAC confirmed 3 groups at Eastern Mangrove area and one in Mafrag area.</p> <p>Progress Meeting 21: "ADSSC/DC requested ADMAC to update the programme as the progress of works is behind to the planned progress and still far from the required rate of progress necessary to meet the contract completion date". and "The progress is falling behind by 21.64% to the programme. The average monthly progress is only 1.96% for the time elapsed of 48.37%."</p>
	How the project leadership had an influence on project success?	<p>- PM is an important role but with this type of project, you need to make sure you have enough manpower and equipment. These ate straight forward work and you must be able to secure enough people and equipment to finish on time".</p> <p>- he helped the project in away but he was lacking resources</p> <p>- with my limited number of resources, I was able to complete the project</p>	<ul style="list-style-type: none"> <li>PM is perceived to help project</li> <li>PM is perceived managed lack of resources successfully</li> </ul>	Progress Meeting No. 4: "ADSSC conditional approval of PM Mr. Sameeh Al Ahmed subject to probation period three months received on 5th July 2010."
Human Capital Research Question 2	How Monitoring and Control had an influence on project success?	<p>- to avoid facing problem with this, we use to highlight the importance of this in almost all of our meetings so we were able to control and monitor it.</p> <p>- we put more control on this so you can say it is the control that helped in this improvement but the potency factor is not as they were working together for long I think</p> <p>- we kept an eye specially on this as they were many of them. that is due to the controlled plan we set</p> <p>- we dedicated a member only looking after this. team was always in good relation and we managed to improve the average progress as we put more focus and works started to open</p> <p>- This actually helped to monitor and discuss the progress and push the project as</p>	<ul style="list-style-type: none"> <li>Monitoring and control</li> <li>Knowledge sharing</li> <li>Communication</li> <li>Exploration for alternative solution</li> <li>Remorse and realization of contingencies</li> <li>Situation</li> <li>Implement</li> </ul>	<p>Progress Meeting No. 11: "ADMAC stated that permission from ADM Road Department QC Lab for NDRC at Salam Street not given, DC replied that assistant letter to Road department has been forwarded on 19.09.2010 with copy to ADMAC to chase up their reply, ADSSC requested Dorsch/ADMAC to chase up Road department approval for NDM crossing Al Salam Street.</p> <p>Progress Meeting 24: "The progress is falling behind by 20.37% to the programme. The</p>

		<p>you can see that the monthly average progress started to increase week by week</p> <ul style="list-style-type: none"> <li>- Yes, better control helped</li> <li>- This is to push for the completion of the outstanding work as part of control of course</li> <li>- internal control is important to put work on track. The same. Good internal control implementation. to have a tighter control</li> <li>- we understand the importance of the control so we decided to do weekly monitor to overcome any issue quickly</li> <li>- due to the weekly control we implemented</li> <li>- when a project reaches to a critical time which is near completion, it is always good to do the monitoring program to ensure smooth operation</li> </ul>	<ul style="list-style-type: none"> <li>• Readiness</li> <li>• decision and action plan</li> <li>• reach a solution</li> <li>• trying solutions</li> </ul>	<p>average monthly progress is only 2.5% for the time elapsed of 57.73%.</p> <p>Progress Meeting 25:” ADMAC requested weekly progress meetings to monitor and discuss the progress. DC stated internal meeting can be arranged with RE”.</p> <p>Progress Meeting 26:”ADMAC to resubmit NDM work look ahead program for 3 months immediately in order to give importance to priority areas and increase the number of NDM machines to recover the delay.</p> <p>Progress Meeting 27:” DC stated the variables in progress increasing week by week and should not be more than 25% ADMAC to increase the progress work.</p> <p>Progress Meeting 28:” The progress is falling behind by 24.97% to the planned programme. The average monthly progress is only 3.54% for the time elapsed of 75.10%.</p>
	How Management Support had an influence on project success?	<ul style="list-style-type: none"> <li>- If you have a strong project manager who is strong in solving problem it will be good of course but he needs the company support</li> <li>- yes sure. If the project leader can solve issues and empowered by the company</li> <li>- I work within limited boundary and within the capability of the company</li> </ul>	<ul style="list-style-type: none"> <li>• PM helped project</li> <li>• management support is perceived to be weak</li> <li>• Resource and equipment issue</li> </ul>	<p>Progress Meeting 22:” ADMAC to increase the NDM machines to comply the NDM works completion in all other areas. This has been addressed by ADSSC and DC repeatedly during the progress meetings.</p>
	Why Management Support had an influence on project success?	<ul style="list-style-type: none"> <li>- Management support was not that good otherwise they would have done something with the issue of resources and equipment.</li> <li>- Yes. They were not able to solve this problem which was the main cause of the project delay</li> <li>- I’m not sure if the management was in favor of adding more resources to the project at that time. there were not able to increase the resources</li> <li>- the management is supportive to the team but sometimes it is not just by increasing the resources you will be able to increase progress. you need to have the right people. so it is not the number only, it is the quality of team you are bringing we work within boundaries so not all problems can be solved easily like that</li> </ul>	<ul style="list-style-type: none"> <li>• Weak management to devote time</li> <li>• Weak management to review plan</li> <li>• Weak management to follow up on results</li> <li>• Weak management to facilitate problems</li> <li>• Schedule over ran</li> <li>• No action by management</li> <li>• weak problem solving ability</li> <li>• team analysis</li> </ul>	<p>Progress Meeting 21: “ADMAC to increase the NDM machines to comply the NDM works completion in all other areas. This has been addressed by ADSSC and DC during the progress meeting held on 12.04.2011 (item 20.5.2).</p> <p>Progress Meeting No 22 to No 35:” ADSSC express their concern for delay on progress and poor mobilization for NDM works. And asked to increase NDM machines</p>

			<ul style="list-style-type: none"> <li>• Resource and equipment issue</li> <li>• Action taking</li> <li>• Risk management</li> <li>• Procurement strategy</li> <li>• Management support is a critical success factor</li> </ul>	
Relation Capital Research Question 3	How Relationship had an influence on project success?	<p>- This type of project involves so many authorities and parties. You need to get approval and permit before you start the work and therefore, if you are not able to get them, you will for sure delay your project.</p> <p>- no. everything was ok. ADAMAC maintained good cooperation with them. They got all the non-objection and approval from them.</p> <p>- without approval you cannot start the work. Looking at the scope of the project, approvals had to be obtained every time a new area to be opened so we have to highlight these important factors in every meeting. no issues of approval and permits from authorities.</p> <p>- so much of our time was spent on the approval process of this project. we did not face any issue with approval</p>	<ul style="list-style-type: none"> <li>• Authorities</li> <li>• Approval</li> <li>• Project delay</li> <li>• Cooperation</li> <li>• Approval is critical</li> <li>• Inter-organizational trust</li> <li>• overcoming the difficulties</li> </ul>	NO issue was noted in any of the progress meeting with regards to delay in obtaining permits or approval
Social Capital Research Question 4	How Social had an influence on project success?	<p>- This is also important. The issue was with less number of resources and equipment</p> <p>- we did not notice any issue between the team and nothing was</p> <p>- we have a very friendly environment and the team members know each other for long</p>	<ul style="list-style-type: none"> <li>• relationship with contracting parties is perceived to be strong</li> <li>• Coordination between parties is perceived to be strong</li> <li>• Trust</li> <li>• Connection between contracting parties</li> <li>• Client is perceived to be satisfied</li> <li>• Connection between contracting parties is perceived to be strong</li> <li>•</li> </ul>	NO issue was noted in any of the progress meeting with regards to issue with team members



## Case 5: Summary of Interviews Transcripts of Case 1 (Project O-10525)

Category/RQ	Interview Question	Interview transcript [Client PM - Black, Consultant PM - Blue, Contractor PM - Green]	Initial coding framework	Supporting Evidence
Human Capital  Research Question 1	how the early approval of the project manager influenced the overall outcome of the project?	<ul style="list-style-type: none"> <li>The project leader had been appointed and approved at an early stage of the project. (Client Project Manager, C4-CL-IN1)</li> <li>It is important to have a project manager even before the start of the project. (Consultant Project Manager, C4-CL-IN2)</li> <li>I was assigned to the project when we got the letter of award, which gave me enough time to plan. (Contractor Project Manager, C4-CL-IN3)</li> </ul>		
	how team experience influenced the overall outcome of the project?	<ul style="list-style-type: none"> <li>The team experience was very high, which made it easier for them to make this project a successful project. (Client Project Manager, C4-CL-IN1)</li> <li>Team members have strong technical knowledge and they are specialized in this field. (Consultant Project Manager, C4-CL-IN2)</li> <li>The company was excellent, which means also that they have strong technical skills and that was the main driver for project success. (Contractor Project Manager, C4-CL-IN3)</li> </ul>	<ul style="list-style-type: none"> <li>project team is perceived to be strong</li> <li>successful project</li> <li>Experience with project-related activities</li> <li>strong technical skills is main driver</li> <li></li> </ul>	
	how local experience of the team helped project success?	<ul style="list-style-type: none"> <li>The contractor had to follow certain procedures and steps before the start of the project. (Client Project Manager, C4-CL-IN1)</li> <li>They followed the procedures but this is a lengthy procedure and cannot be avoided. (Consultant Project Manager, C4-CL-IN2)</li> <li>The planning for the project was excellent and the quality plan was very good. (Contractor Project Manager, C4-CL-IN3 substituted)</li> </ul>		
	the planning competency level of the contractor during the project	<p>They were good. (Client Project Manager, C4-CL-IN1)</p> <ul style="list-style-type: none"> <li>Excellent team. (Consultant Project Manager, C4-CL-IN2)</li> </ul>		
	How this competency of the contracting planning contributed to the project success.	<p>Yes (Client Project Manager, C4-CL-IN1)</p> <ul style="list-style-type: none"> <li>True. (Consultant Project Manager, C4-CL-IN2)</li> </ul>		
	why time extension was given to the contractors as indicated in the progress meeting	<ul style="list-style-type: none"> <li>The project was successfully handed over to the client which indicates that the quality was met.</li> <li>The team experience was very high, which made it easier for them to make this project a successful project. (Client Project Manager, C4-CL-IN1)</li> <li>Team members have strong technical knowledge and they are</li> </ul>		

	reports	specialized in this field. (Consultant Project Manager, C4-CL-IN2)		
	why the project quality performance was high	They met the project scope fully and all snags were cleared with no delay. (Client Project Manager, C4-CL-IN1)		
Organization Capital Research Question 2	how team motivation influenced the overall outcome of the project	<ul style="list-style-type: none"> <li>Team was motivated to successfully complete the work on time, which was seen from their communication and problem solving. (Client Project Manager, C4-CL-IN1)</li> </ul>		
	how the motivation factor of the client and consultant project managers influenced the project?	Both of them showed high level of motivation and involvement to push this project. (Contractor Project Manager, C4-CL-IN1)		
	how top management influenced the overall outcome of the project	<ul style="list-style-type: none"> <li>If their top management was not involved, this project would have not finished on time. (Client Project Manager, C4-CL-IN1)</li> <li>Good support from Besix management in this project. (Consultant Project Manager, C4-CL-IN2)</li> <li>We had many issues on this project and the management was there for us. (Contractor Project Manager, C4-CL-IN3)</li> </ul>		
	how their senior management influenced the project in term of problem solving	<p>As part of the project team assigned, I represent our management during the project to sort out project issues. (Client Project Manager, C4-CL-IN1)</p> <ul style="list-style-type: none"> <li>Due to the service we provide as a consultant, my management is not involved in issues during the project. (Consultant Project Manager, C4-CL-IN1)</li> </ul>		
Relation Capital Research Question 3	how the relationship with entities directly associated with the project influenced the overall outcome of the project?	<ul style="list-style-type: none"> <li>Power connection is a problem sometimes and it is out of any control and there was a bit of delay to get the power from ADDC. It is helpful if there is special understanding and support between governmental companies in the future. (Client Project Manager, C4-CL-IN1)</li> <li>Relationship between governmental companies with regards to their projects should always be looked at to find ways to make it better. (Consultant Project Manager, C4-CL-IN2)</li> <li>Approval is another important point and it could affect the project if it is not managed well. (Contractor Project Manager, C4-CL-IN3)</li> </ul>		

## Case 6: Summary of Interviews Transcripts of Case 6 (Project O-1692)

Category/RQ	Interview Question	Interview transcript [Client PM - Black, Consultant PM - Blue, Contractor PM - Green]	Initial coding framework	Supporting Evidence
Human Capital  Research Question 1	How the experience had an influence on project success?	<ul style="list-style-type: none"> <li>- They always had shortage of man power and team assigned was not having enough skill to compensate for the difference as they did not have good experience</li> <li>- Lack of resources and unqualified team was an issue as you can see throughout the progress reports. They all were minuted. yes. Their management were not supportive for this issue</li> <li>- We requested the management to increase manpower but due to other commitment, they were not able to</li> </ul>	<ul style="list-style-type: none"> <li>• Industry Specific Experience is valuable</li> <li>• lack of resources</li> <li>• Team is perceived not to have specialist members</li> <li>• No technical Excellence in monitor technical excellence</li> <li>• No action by management</li> <li>• Resource and equipment issue</li> <li>• shortage of man power</li> <li>• Weak industry-specific experience</li> <li>• industry specific experience is perceived to be weak</li> <li>• Management support is a critical success factor</li> <li>• management support is perceived to be weak</li> <li>• implementation of innovative ideas is perceived to be weak</li> <li>• Perception of the</li> </ul>	Progress Meeting No. 12: "ANC advised by ADSSC to improve the Labor Power on Site at the soonest since now all Material related are approved.

			situation	
	How Planning capability had an influence on project success?	<p>- It is basically lack of good planning and experience. They were too late to provide these submittals which contributed to project delay</p> <p>- It is just bad planning. They could not estimate the risk and delay this could cause.</p> <p>- We were lacking experienced staff to complete these two parts</p>	<ul style="list-style-type: none"> <li>• Planning ability is perceived to be weak</li> <li>• resource planning is perceived to be weak is perceived to be weak</li> <li>• clear standards</li> <li>• Client dissatisfaction</li> <li>• lacking experienced staff</li> <li>• late to provide these submittals</li> <li>• Unsuccessful project</li> <li>• Unsuccessful project</li> <li>• No technical Excellence in organization of accumulated technical</li> <li>• Experience</li> <li>• Weak management to review plan</li> </ul>	Progress Meeting No.17: “ADSSC/ ACE requested Contractor to provide the rest of shop Drawings and all materials for approvals to avoid any delay especially the overseas materials needs much time to reach the site”.
	how the assigned project manager influenced the overall outcome of the project?	<p>- The project manager was not fully aware of the regulations here. He is weak technically.</p> <p>- Not following the regulations. The project manager was supposed to be aware of them to avoid such thing. The project manager was not aware of all of its technical sides.</p> <p>- As I said, regulations by WRM were not so clear to make clear standard to follow</p>	<ul style="list-style-type: none"> <li>• PM is perceived to have weak Industry specific and local experience</li> <li>• Not aware of standard</li> <li>• not aware of the regulations here</li> <li>• No technical Excellence in nurture/in force technical practice</li> <li>• not estimate the risk and delay</li> <li>• not fully aware of the</li> </ul>	Progress Meeting 37: “ANC and ACE have received a warning letter from WRM on 5th march 2012 to stop the works pending issuing of building permit.

			<ul style="list-style-type: none"> <li>regulations</li> <li>PM is perceived to disturb the work duration</li> <li>PM is perceived to negatively affect outcome</li> </ul>	
	How the communication factor had an influence on project success?	<ul style="list-style-type: none"> <li>Communication was another issue in this project and wasted unnecessary time.</li> <li>Communication was not as good it should be.</li> <li>We had some conflict due to communication.</li> </ul>	<ul style="list-style-type: none"> <li>communication is perceived to be weak</li> <li>No technical Excellence in organization of information communicated to/from customers</li> </ul>	Progress Meeting No 37: "ANC object to the fact that minutes of the last Progress Meeting #36 did not reflect actual discussions; specifically the letter that ADSSC would issue. ANC explained that due to the legal liability and specific discussions with other departments (WRM) work on site couldn't start as discussed in Progress Meeting # 36. Both ACE and ADSSC confirmed their acceptance of the issued minutes as true representation of discussions, and ADSSC added that meeting records are not intended to record actions taking place after end of the meeting.
	How the problem solving ability had an influence on project outcome?	<ul style="list-style-type: none"> <li>The project was full of problems and you can see that they were not able to solve them quickly</li> <li>The problem solving was a big issue</li> <li>We were trying to do our best to solve issue within my capability as a project manager</li> </ul>	<ul style="list-style-type: none"> <li>Action taking</li> <li>innovation and creative solutions are perceived to be weak</li> <li>No Innovative solutions for issues and problems</li> <li>Problem solving ability is perceived to be weak</li> <li>Problem solving ability is perceived to be weak</li> <li>weak resource planning</li> <li>planning intention</li> <li>Identification of the problem</li> </ul>	Progress Meeting No. 30: "ANC advised by ACE to improve the staff and labours for E and M to cover the delay in this stage. Metito stated that they will increase the labour power from 5 to 10 as per the resources available at site and for cable laying.

			<ul style="list-style-type: none"> <li>• Exploration for alternative solution</li> <li>• Remorse and realization of contingencies</li> <li>• Situation</li> <li>• reach a solution</li> </ul>	
Human Capital Research Question 2	How motivation had an influence on project success?	<p>- This effected the project and cause a lot of delay. The team was not motivated to move the work. Also, the internal control by the company was weak. The company's management failed to allocate resources and establish a sense of ownership to the team.</p> <p>- The team did not seem interested to move the project. No responsibility and no interest</p>	<ul style="list-style-type: none"> <li>• No performance-enhancing initiatives</li> <li>• internal control</li> <li>• not assigning the right experience team</li> <li>• Not right experienced team</li> <li>• Unsuccessful project</li> <li>• Weak internal control</li> <li>• Weak management support</li> <li>• weak resource planning</li> <li>• weak Team analysis</li> <li>• team efficacy/potency is perceived to be weak</li> <li>• Preference ranking</li> <li>• decision and action plan</li> </ul>	Progress meeting No. 22: "After the meeting ADSSC stated that the shortage of material approval from contractor side since they promised in Technical Meeting that they will submit all long lead items and still a lot of this not submitted yet as per the list provided by the contractor in meeting.
	How Monitoring and Control had an influence on project success?	<p>- It was clear that the internal control by the contractor was weak causing a delay in shop drawing</p> <p>- No good project internal control</p>	<ul style="list-style-type: none"> <li>• Clear Understanding issue</li> <li>• Monitoring and control</li> <li>• Shop drawing</li> </ul>	Progress Meeting No. 22: "Overdue submittals, Material, Method statement and shop drawing
	How Management Support had an influence on project success?	<p>- They always had shortage of man power and the management was not interested in supporting</p> <p>- They were not very much supportive. They could not help in assigning the right manager, the right experienced team, and good internal control</p>	<ul style="list-style-type: none"> <li>• not assigning the right experience team</li> <li>• Not right experienced</li> </ul>	Progress Meeting 25: " ANC advised by ACE to improve the staff and labours for E and M to cover the delay in this stage. ANC advised by ACE and ADSSC to deduct the amount of

		<p>- We requested the management to increase manpower but due to other commitment, they were not able to</p>	<p>team</p> <ul style="list-style-type: none"> <li>• overcoming the difficulties</li> <li>• Procurement strategy</li> <li>• Project time over-run</li> <li>• Weak internal control</li> <li>• Risk management</li> <li>• Weak management to devote time</li> <li>• No Team Support via facilitation</li> <li>• weak resource planning</li> <li>• weak Team analysis</li> <li>• Weak management to follow up on results</li> <li>• realisation of benefits focus</li> <li>• Weak management to facilitate problems</li> <li>• implementation mind-set</li> <li>• Implement</li> <li>• trying solutions</li> </ul>	<p>QA/QC Engineer in next Bill of Quantity.</p>
<p>Relation Capital</p> <p>Research Question 3</p>	<p>how the relationship with Abu Dhabi Municipality influenced the overall outcome of the project?</p>	<p>- The relationship was not so good. There was always delays which heavily effected the project</p> <p>- It seemed that they had issues with all entities when getting approval</p> <p>- We were not getting support from these authorities and made things too complicated for us</p>	<ul style="list-style-type: none"> <li>• relationship with contracting parties is perceived to be weak</li> <li>• Coordination between parties is perceived to be weak</li> <li>• planning intention</li> <li>• Weak relationship with contracting parties</li> <li>• no innovation in</li> </ul>	<p>Progress Meeting No. 2: "Al Nasr indicated that no prwress was made pending approval of the Municipality of the allocation of a plot for the establishment of labourers campsite. Progress Meeting No. 2: No progress to be measured against programme this period. ADSSC requested Contractor to provide all required submittal .Jogs for materials, equipment, shop drawings etc. In addition, the Contractor shall maintain a log for correspondence to be submitted at bi-weekly meeting, to allow ADSSC to follow up.</p>

			organization of acquired knowledge <ul style="list-style-type: none"> <li>• Inter-organizational trust</li> <li>• Readiness</li> </ul>	
Social Capital  Research Question 4	How connection between team members had an influence on project success?	- It was very good and all seemed to get along well - No issue. If there was, the project would not be finished by now I guess - Social aspect is important in any project and we all have good relationship with each other.	<ul style="list-style-type: none"> <li>• Connection between contracting parties</li> <li>• Knowledge sharing</li> <li>• Satisfaction</li> <li>• Trust</li> </ul>	



## Case 7: Summary of Interviews Transcripts of Case 7 (Project 1086B)

Category/RQ	Interview Question	Interview transcript [Client PM - Black, Consultant PM - Blue, Contractor PM - Green]	Initial coding framework	Supporting Evidence
Human Capital  Research Question 1	How the experience had an influence on project success?	<ul style="list-style-type: none"> <li>- Not all the team members were competent and we highlighted this many times during meetings. This surely affected the performance in terms of meeting the time.</li> <li>- no sufficient number of labors and plant and qualified key staff to meet the program.</li> <li>- team was not up to the level due to lack of resources and competencies.</li> <li>- some of the team members were lacking the skill which caused a delay in meeting the quality</li> <li>- I agree that there was a lack of skills with few of our team members</li> </ul>	<ul style="list-style-type: none"> <li>• enough manpower</li> <li>• experience of individuals</li> <li>• lack of resources and competencies</li> <li>• manpower issue</li> <li>• Project delay</li> <li>• project team is perceived to be weak</li> <li>• No experience with project-related activities</li> <li>• No knowledgeable member in the team</li> <li>• Team is perceived not to have specialist members</li> <li>• no experience prior to the current project</li> <li>• proportional relation of experience and project success</li> </ul>	<p><b>Progress Meeting No.5:</b>” PIL again instructed ADMAC to provide sufficient number of labors and plant and qualified key staff to meet the program”</p> <p><b>Progress Meeting No.6:</b>” PIL again instructed ADMAC to provide sufficient number of labors and plant and qualified key staff to meet the program.</p> <p><b>Progress Meeting No.10:</b>” 3 site instructions have been issued to the Contractor regarding lack of manpower and equipment and materials.”</p> <p><b>Progress Meeting No. 12:</b>” PIL advised ADMAC to appoint enough experienced site staff (Forman, Labors) in order to improve the productivity.</p> <p><b>Progress Meeting No. 19:</b>” PIL stated that, ADMAC to increase skilled experienced manpower (foremen, pipe fitter, carpenter, steel fixer, mason etc. and equipment’s at site to recover the overall delay in the project.”</p> <p><b>Progress Meeting No33:</b>” Overall Actual Progress: 42.28%. – it was noted that the delay shown at the previous meeting had increased even with respect to comparison with the Recovery Program – ADSSC expressed continuing concern over this delay</p>
	Can you explain the statement and how it influenced project outcome? (Progress Meeting No.11:”ADSSC instructed the Contractor to make	<ul style="list-style-type: none"> <li>- some piling subcon were not responding that caused some delay in executing this activity.</li> <li>- there are approved lists of subcon that can be approached. They did not plan for this in a proper way. They could have contacting them much earlier to avoid the delay.</li> <li>- it affected the dewatering activity which caused delay in the project. They could not plan well for the materials</li> <li>- equipment issue was throughout the project and negatively affected the handover</li> </ul>	<ul style="list-style-type: none"> <li>• Action taking</li> <li>• business risks</li> <li>• Weak Planning</li> <li>• Resources and equipment issue</li> <li>• Procurement strategy</li> </ul>	<p><b>Progress Meeting No.11:</b>”ADSSC instructed the Contractor to make his own management earlier in order to procure the materials including pipes, gravel, steel, ....etc in order to avoid delay to the construction program.</p> <p><b>Progress Meeting No.11:</b>”ADSSC/PIL advised ADMAC that all materials and equipment including diesel has to be managed in advance</p>

	his own management earlier in order to procure the materials including pipes, gravel, steel, ....etc in order to avoid delay to the construction program.	date as they were not able to make good planning of resources and equipment. - it was bad planning and they were not aware of the prequalification process to list any supplier or subcon in the approved lists. - to avoid such problem with materials delivery and piling work there must be good planning - there was a delay in appointing the right piling company as they had to be among the approved vender list. As for the material delivery, I agree that there was a delay which effected the progress of work		to avoid any delay of the project. <b>Progress Meeting No.30:</b> ” ADSSC/PIL advised ADMAC to expedite the submission of the outstanding materials as scheduled. Specifically the long lead delivery item (Knife Gate Valve and Aluminum access cover) and Crane Mounted Truck. ADSSC/PIL stated that any consequences due to delay in material submittal shall be solely the Contractors responsibility.
	Can you explain the statement and how it influenced project outcome? ( <b>Project Meeting No. 80</b> ) ADMAC stated that, some of staff is resigning, ADMAC will provide replacement soon.	- this contributed to the delay in handing over the project but it was not sever as the project was at the end - toward the end of the project, we noticed some staff resignations from the contractor side and we asked for immediate replacement. This somehow made an effect to the project time - it is common that you face staff resignation toward the end of the project. We managed to make replacement to continue the work”	<ul style="list-style-type: none"> <li>employees leaving</li> <li>Resource issue</li> <li>staff resignations</li> <li>reallocating resources</li> <li>decision and action plan</li> <li>overcoming the difficulties</li> </ul>	<b>Project Meeting No. 80:</b> ” ADMAC stated that, some of staff is resigning, ADMAC will provide replacement soon.
	how the project leadership influenced the overall outcome of the project?	- We found him technically competent to take the project however, due to lack of resources throughout the project; we had a lot of problems. - he was OK but the team members were not - Mr. Manna was good and we approved him - I have executed similar projects before and that helped me to gain a lot of experience	<ul style="list-style-type: none"> <li>Project Manager is perceived to be strong</li> <li>No experience of individuals</li> <li>No proficient individual</li> <li></li> </ul>	<b>Progress Meeting No. 1:</b> “ADSSC approved Mr. Mohammed Manaa as a Contractor’s Project Manager”
	Can you explain the statement and how it influenced project outcome? ( <b>Progress Meeting No1:</b> “ADMAC stated that, visas for 1500 Employee under process. Moreover ADMAC could hire immediately any additional numbers from one of the biggest labor supplier	- enough manpower was really an issue for this project and made a very bad effect on project performance. We suggested them a solution to use Alswaed which is a manpower supply company but that was not done. - we suggested that but it the suggestion was not taken seriously by the contactor - it was against the company policy to use Alswaed plus you can not find people with the right experience there	<ul style="list-style-type: none"> <li>Risk management</li> <li>Weak Planning</li> <li>Resources and equipment issue</li> <li>enough manpower</li> <li>team efficacy/potency is perceived to be strong</li> <li>manpower issue</li> <li>Problem solving</li> <li>Project delay</li> </ul>	<b>Progress Meeting No1:</b> “ADMAC stated that, visas for 1500 Employee under process. Moreover ADMAC could hire immediately any additional numbers from one of the biggest labor supplier (AL-SAWAED).

	(AL-SAWAED).		<ul style="list-style-type: none"> <li>to put project on track</li> <li>effective routines for project improvement</li> <li>Exploration for alternative solution</li> </ul>	
	Can you explain this statement and how it influenced project outcome?	- due to the delay in making decision of selecting the supplier, there was a delayed for 3 months until decision taken to procure the pressure pipes from Abu Dhabi Pipe Factory.	<ul style="list-style-type: none"> <li>decision making delay</li> <li>management support is perceived to be weak</li> <li>Weak problem solving ability</li> </ul>	<b>Meeting No1:</b> "ADMAC stated that, visas for 1500 Employee under process. Moreover ADMAC could hire immediately any additional numbers from one of the biggest labor supplier (AL-SAWAED).
	How the problem solving ability had an influence on project outcome?	<ul style="list-style-type: none"> <li>- they have done similar works but their problem solving abilities was not good.</li> <li>- I guess problem solving ability combined with decision making and management support.</li> <li>- the management was not able to solve problem quickly and give support to the people.</li> <li>- projects are always full of problems and sometimes you need a very strong support from clients and management to be able to solve them as the case of materials, equipment and team in this project</li> </ul>	<ul style="list-style-type: none"> <li>Experienced staff for productivity</li> <li>No action at the early stage</li> <li>Problem solving ability perceived to be weak</li> <li>No Build upon and learn from prior mistakes</li> <li>mistakes in future improvement projects</li> <li>Problems and issues in the project</li> <li>Preference ranking</li> <li>Remorse and realization of contingencies</li> <li>Situation</li> <li>Management support is a critical success factor</li> </ul>	
Human Capital Research	How motivation had an influence on project success?	<ul style="list-style-type: none"> <li>- Motivation was not an issue. No matter how motivated the team is, you must have enough resources to carry out the activities without delay</li> <li>- the team seemed to be motivated and maybe because they were trying to build</li> </ul>	<ul style="list-style-type: none"> <li>motivation is perceived to be strong</li> <li>performance-</li> </ul>	No issue were noticed in any progress meetings

Question 2		<p>their experience</p> <ul style="list-style-type: none"> <li>- our team was motivated and they finally completed the project</li> </ul>	enhancing initiatives	
	How Monitoring and Control had an influence on project success?	<ul style="list-style-type: none"> <li>- communication was fine and there was no major issue. Through timely progress meeting, we were able to avoid communication issues.</li> <li>- we used to make progress meetings regularly which is a perfect way monitor the work and communicate issues and problem that may affect the progress of work</li> <li>- we also conducted internal progress meetings to make sure that all problems are solved and work is as per schedule</li> <li>- At the end the quality was met otherwise it would have not been accepted. Part of internal control is put more focus to make sure quality is met.</li> <li>- we had a very tight monitoring through timely progress meeting to put things on track as without doing this the project would have taken even longer time to finish</li> <li>- they finally met the quality as part of accepting the handover.</li> <li>- we met the project quality as specified</li> </ul>	<ul style="list-style-type: none"> <li>• Communication is perceived to be strong</li> <li>• Internal control is perceived to be strong</li> <li>• interim valuation and financial statements are available</li> <li>• Periodical and timely progress meeting reports</li> <li>• site meetings are regular</li> <li>• Site visits are regular</li> <li>• rescheduling activities are regular</li> <li>• regular project plan review.</li> <li>• project's work programme timely updated</li> <li>• Knowledge sharing</li> <li>• Perception of the situation</li> <li>• Identification of the problem</li> <li>• Implement</li> <li>• Readiness</li> <li>• realisation of benefits focus</li> </ul>	<p>Minutes of Progress Meeting reports from No. 1 to No.94</p> <p><b>Progress Meeting No1 to No90:</b> "PIL Highlights the utmost importance of quality in this project, ADMAC was instructed to submit their Quality Plan for review and approval prior to start the works at site.</p> <p><b>Progress Meeting No1:</b> " PIL advised ADMAC to provide sufficient numbers of QA/QC staff to fully implement the quality plan</p> <p><b>Progress Meeting No4:</b>" PIL advised ADMAC to obtain permit to work from TRANSCO, ADSSC and other authorities when the work is adjacent to their utilities, the permit must be obtained prior to start the work, ADMAC is always required to follow other authorities regulations during construction adjacent to the existing utilities</p>
	How Management Support had an influence on project success?	<ul style="list-style-type: none"> <li>- It was the contractor issue so our management should not be part of this.</li> <li>- My management was not involved.</li> </ul>	<ul style="list-style-type: none"> <li>• Weak management to devote time</li> <li>• weak management to review plan</li> </ul>	

			<ul style="list-style-type: none"> <li>• weak management to follow up on results</li> <li>• weak management to facilitate problems</li> </ul>	
Relation Capital Research Question 3	how the relationship factor influenced the overall outcome of the project?	<p>- There was no issue as far as I remember with obtaining permits from authorities. We put more focus on this point in all of our meetings to ensure that things run smoothly. With a project that involves many third parties, obtaining permits could really affect the project and causes delays.</p> <p>- relationship was good and they had no issue with obtaining permits or approval.</p> <p>- there was no problem with third parties. The relationship was in good status and did not cause delay</p> <p>- we have good relationship with other governmental authorities as we build this relationship over years</p>	<ul style="list-style-type: none"> <li>• business risks</li> <li>• Coordination between parties is perceived to be strong</li> <li>• reach a solution</li> <li>• trying solutions</li> <li>• relationship with contracting parties is perceived to be weak</li> <li>• Inter-organizational trust</li> </ul>	No issue were noticed in any progress meetings
Social Capital Research Question 4	How connection between team members had an influence on project success?	<p>- connection between them was fine otherwise nothing would have moved.</p> <p>- the relationship between all team members of the project was good and no issue was noticed otherwise it would have been minuted</p> <p>- we always have good relationship with our clients and our people which is very healthy part to ensure smooth operation.</p>	<ul style="list-style-type: none"> <li>• Connection between contracting parties is perceived to be strong</li> <li>• good communication</li> <li>• Solve communication issues</li> </ul>	No issue were noticed in any progress meetings

## Case 8: Summary of Interviews Transcripts of Case 8 (Project O-1434)

Category/RQ	Interview Question	Interview transcript [Client PM - Black, Consultant PM - Blue, Contractor PM - Green]	Initial coding framework	Supporting Evidence
Human Capital  Research Question 1	Can you explain the statement and how it influenced project outcome? ( <b>Progress Meeting 29:</b> The resources on site seem (at this stage) to be sufficient for completion of works on time. However, if resources are added then they should take the necessary action to rectify the progress)	<p>- All were good and that it is why we did not have major issues during the project.</p> <p>- The project manager was the right man for this job. His team had the right experience.</p> <p>- I have enough experience I developed doing similar projects so it helped. My team was having enough experience to do such work. Without the experience we had, the project would have been effected.</p>	<ul style="list-style-type: none"> <li>• Competent Project Manager</li> <li>• experience of individuals</li> <li>• previous long experience</li> <li>• experience working together</li> <li>• project team is perceived to be strong</li> <li>• Team is perceived to have good industry-specific experience</li> <li>• Good team structure</li> <li>• project on time</li> <li>• Project succeeded</li> <li>• Project team is good</li> <li>• Good operational performance</li> <li>• quality was met</li> <li>• team is perceived to be cohesive</li> <li>• knowledgeable member in the team</li> <li>• organizational memory</li> <li>• Team is perceived to have specialist</li> </ul>	<b>Progress Meeting 29:</b> The resources on site seem (at this stage) to be sufficient for completion of works on time. However, if resources are added then they should take the necessary action to rectify the progress

			members	
	How Planning capability had an influence on project success?	<p>- Their planning was good and this could be noticed when making a recovery plan when the project schedule slipped.</p> <p>- They have good planning skill.</p> <p>- I worked with our planning engineer closely and we made sure we plan for everything ahead of time.</p>	<ul style="list-style-type: none"> <li>• Action at the early stage</li> <li>• Good team planning ability</li> <li>• Good Relationship</li> <li>• Good team environment</li> <li>• Knowledge sharing</li> <li>• Knowledge generated by other members</li> <li>• Working together</li> <li>• task-related information and knowledge</li> <li>• access to organizational experience</li> <li>• Better sense to what works and what does not</li> <li>• Organizational experience grows, individuals opportunities for to benefit from knowledge accumulated from others increase</li> </ul>	<p><b>Progress Meeting 31:</b> ADSSC raised their concern about the remaining NDRC crossings and asked GC to prepare a schedule for these remaining NDCR crossings and asked GC to prepare a schedule for these remaining NDRCs to ensure there is no any expecting delay</p>
	How the communication factor had an influence on project success?	<p>- They requested discussion face to face for drawings issue approval which helped moving the subject. Drawings need to be approved before execution of work so for sure it has a time effect.</p> <p>- GCC could not get the drawings right quickly. We had to meet several times to resolve it.</p> <p>- We requested face to face communication to speed up the approval as other related work was depending on the approval.</p>	<ul style="list-style-type: none"> <li>• Better Internal control</li> <li>• Better problem solving</li> <li>• Good Communication</li> <li>• Recovery plan</li> <li>• Strong problem solving</li> </ul>	<p><b>Progress Meeting 16:</b> GCC have raised their concern about all engineering works for pumping stations which will defiantly cause delay of pump station works as the discussion face to face is more productive than sending the drawings to hyder HO to check and approve ADSSC dedicated that their required</p>

			<ul style="list-style-type: none"> <li>ability</li> <li>facilitates amount and quality of information exchanged</li> <li>team receptive to improvement</li> </ul>	te, frp, Hyder will be available on site offices 2 days per week to finalize all requirements.
	How the problem solving ability had an influence on project outcome?	<ul style="list-style-type: none"> <li>- The team was good in solving the problem and if it had not been solved quickly, it could have delayed the project as labors are the main driver for the activities.</li> <li>- I'm not aware of this issue. Maybe it was before I joined or when I was away.</li> <li>- This issue initially effected the performance of our labors but we came up with a solution to overcome it.</li> </ul>	<ul style="list-style-type: none"> <li>Problem solving ability is perceived to be strong</li> <li>team-based problem-solving</li> <li>Team ability to expedite work</li> <li>issues were "worked out" previously</li> <li>access to prior project-related materials</li> </ul>	<b>Progress Meeting 6:</b> GCC commented that they are facing problem in labors services and facilities at site in long distance groups"
Organization Capital  Research Question 2	How Internal control had an influence on project success?	<ul style="list-style-type: none"> <li>- It helped very much as this project is considered to be a success project with less time delay from the plan.</li> <li>- As this was a critical project, it was important that the project finishes with no delay. We had to highlight this point in almost every meeting to put more focus on progress and push the project so it helped of course.</li> <li>- To have a good control is important but for this point highlighted in reports was already taken care of by us and this can be reflected in the progress we made throughout the project.</li> </ul>	<ul style="list-style-type: none"> <li>Better Internal control</li> <li>Good Communication</li> <li>No coordination losses between team members</li> <li>Project succeeded</li> </ul>	<b>Meeting 1 to 39:</b> ADSSC and Hyder have advised the contractor that due to the sensitivity and great importance of this project as special consideration should be given to achieve the programmed targets and millstones all the time
	Can you explain the statement and how it influenced project outcome? ( <b>Progress Meeting 29:</b> It is also noticed that there is a delay with the construction of the air release valve champers. 98 champers still to be constructed. This represents another	<ul style="list-style-type: none"> <li>- We keep such comment to put work under control otherwise we will easily slip the project schedule.</li> </ul>	<ul style="list-style-type: none"> <li>Better Internal control</li> <li>project on time</li> <li>documented learnings</li> <li>project database for experts opinion on issue</li> </ul>	<b>Progress Meeting 29:</b> It is also noticed that there is a delay with the construction of the air release valve champers. 98 champers still to be constructed. This represents another alarm for delay



	alarm for delay)			
	Can you explain the statement and how it influenced project outcome? ( <b>Progress Meeting 21:</b> GC stated that concrete casting in both pumping stations affected on night shift due to shortage of hyder's inspectors and requested ADSSC to take action about pumping station concrete casting on night shift, ADSSC will solve that problem)	<ul style="list-style-type: none"> <li>- ADSSC management supported and asked the consultant to assign an engineer during night casting which helped speed up the work as they are able to do more casting over the same period"</li> <li>- ADSSC requested our management and they supported it</li> <li>- We wanted to speed up the progress and avoid losing time so we made the request and client supported us</li> </ul>	<ul style="list-style-type: none"> <li>• No coordination losses</li> <li>• team is able to expedite the work</li> <li>• Management Support</li> </ul>	<b>Progress Meeting 21:</b> GC stated that concrete casting in both pumping stations affected on night shift due to shortage of hyder's inspectors and requested ADSSC to take action about pumping station concrete casting on night shift, ADSSC will solve that problem
	How Management Support had an influence on project success?	<ul style="list-style-type: none"> <li>- Top management handled this issue quickly and approved the request which helped in making more progress to compensate for the slow start.</li> <li>- This was a critical project. Management supported this project very much which helped in pushing the project progress.</li> <li>- Client top management was supportive when we raised this issue.</li> </ul>	<ul style="list-style-type: none"> <li>• team is able to expedite the work</li> <li>• Management Support</li> </ul>	<b>Progress Meeting 12:</b> Working after normal working hours: GCC raised that issue and requested ADSSC acceptance to agree with their request. ADSSC advised that the subject is under study and discussion with top managers and their response will be issued n due time. However, ADSSC advised and requested GCC to increase their groups along the open areas and sections of GS and TSE pipelines in normal working hours.
Relation Capital  Research Question 3	how the relationship factor influenced the overall outcome of the project?	<ul style="list-style-type: none"> <li>- Relationship was excellent and no issue noted throughout the project otherwise it could affect the project quality, time.</li> <li>- The contractor is one of the best here. They have been in business for long so they maintained good relations with authorities.</li> <li>- We have been in business for long and we have dealt with all authorities as we executed many projects in the past. During these years, we built very strong relationship with authorities.</li> </ul>	<ul style="list-style-type: none"> <li>• Good team member connection</li> <li>• trust among team members</li> <li>• willingness to engage in a relationship</li> <li>• long experience</li> <li>• Previous experience working together</li> <li>• trust among team members</li> </ul>	<b>Progress Meeting 1 to 29:</b> no issued was minted

			• group identity	
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## Case 9: Summary of Interviews Transcripts of Case 9 (Project O-1463)

Category/RQ	Interview Question	Interview transcript [Client PM - Black, Consultant PM - Blue, Contractor PM - Green]	Initial coding framework	Supporting Evidence
Human Capital Research Question 1	How the resource factor influenced the project outcome?	<ul style="list-style-type: none"> <li>- Had lack of resources throughout the project. I believe they could not plan well in their resource planning.</li> <li>- Resource planning was weak or it could be financially so they save money.</li> <li>- Having enough resources is always an issue. I requested more resources but got no help.</li> </ul>	<ul style="list-style-type: none"> <li>• Weak planning</li> <li>• resource planning is perceived to be weak</li> <li>• Weak Team</li> <li>• management support is perceived to be weak</li> <li>• No incentives</li> <li>• Inequitable risk profile</li> </ul>	<b>Progress Meeting 20:</b> ADSSC expressed dissatisfaction on the current rate of progress achieved by the contractor with the available /engaged resources under this contract.
	How the influence of this issue stated in progress meeting 42 on project outcome?	<ul style="list-style-type: none"> <li>- This is because of the site engineer resignation we talked about earlier which affected the site activities</li> <li>- Because site engineers left the company</li> </ul>	<ul style="list-style-type: none"> <li>• Specialist members not available</li> <li>• Weak risk planning</li> </ul>	<b>Progress Meeting 42:</b> LWD to ensure that there is no lack of attendance from their site supervisory staff for all ongoing activities.
	Why there was issue in with public inconvenience and compliance and how that influenced the project outcome?	<ul style="list-style-type: none"> <li>- Safety is an important part of the project and one of the standard and project success measures any contractor must meet. So the standard will be effected of NCRs are not closed and no action taken</li> <li>- That effected the project quality resulting of public complains.</li> <li>- Work was too big to cover all HSE issues.</li> </ul>	<ul style="list-style-type: none"> <li>• Quality effect time.</li> <li>• Delay in action</li> <li>• to public inconvenience and compliance</li> <li>• weak problem solving ability</li> <li>• Knowledge management</li> </ul>	<b>Progress Meeting 20:</b> DC reminded LWD regarding the slow progress in responding to site instructions and closing of NCRs
	Why there was a delay in completion of CCTV works?	<ul style="list-style-type: none"> <li>- That was due to the lack of HSE implementation.</li> <li>- They could not get the permit fast</li> <li>- Lack of communication which made them loose time unnecessary.</li> <li>- Obtaining permits was an issue throughout the project which negatively affected the project</li> <li>- That was misunderstood which can easily happen in any project. It took time of course but we were able to compensate the time lost.</li> <li>- The authorities really affected us on this project. They are taking long time to issue a permit.</li> </ul>	<ul style="list-style-type: none"> <li>• Unsuccessful project</li> <li>• Communication is perceived to be weak</li> <li>• Lack of providing accurate information</li> <li>• Weak database</li> </ul>	<b>Progress Meeting 40:</b> LWD pointed out the delay in completion of CCTV works due to unavailability of permits from concern authorities.

	<p>How was the resource planning in this project?</p>	<p>- I believe that some of their site engineers resigned so there was no proper site supervision for a period of time which affected the site progress rate.</p> <p>- Progress was slow because the site supervision was lacking when the supervisors left.</p> <p>- Site engineers left the company without prior notice. You cannot have control over such issues.</p>	<ul style="list-style-type: none"> <li>• Planning ability is perceived to be weak</li> <li>• Weak risk planning</li> <li>• No action by management</li> <li>• team efficacy/potency is perceived to be weak</li> <li>• Team is perceived not to have specialist members</li> </ul>	<p><b>Progress Meeting 20:</b> DC expressed their concern that the submission of revised Organization Chart is still pending</p> <ul style="list-style-type: none"> <li>• DC notified LWD and expressed their doubt about the implementation of Organization Hierarchy for the effective site supervision with the current staffing pattern.</li> <li>• Subsequent to DC's comment regarding the resignation of LWD's site engineer (2nos) currently on board, LWD confirmed that suitable replacement will be provided with sufficient time for overlap.</li> </ul>
	<p>How the influence of this related to CCTV survey report in progress meeting 20 on project outcome?</p>	<p>- Without that report no CCTV commencement of activities so the project got further delayed</p> <p>- They were not lucky with their subcontractors as they selected their subcon based on cost rather than qualification.</p> <p>- I do not think we had an issue there and we were able to submit the report. Maybe it took time but we submitted it.</p>	<ul style="list-style-type: none"> <li>• Delay in action</li> <li>• Weak Subcontractor</li> <li>• Delay in submittals</li> <li>• Project delay</li> <li>• Weak planning</li> <li>• Weak risk planning</li> <li>• Late contractor involvement</li> <li>• Goal commitment</li> <li>• Know-How</li> <li>• knowledge is property</li> </ul>	<p><b>Progress Meeting 20:</b> DC expressed their dissatisfaction in no progress for the submission of CCTV inspection survey report and further stated that</p>
	<p>Can you explain the statement and how it influenced project outcome? (Progress Meeting 3: (Point of Concern: ADSSC expressed concern over the apparent limited progress shown to date in respect of submittals that are necessary in</p>	<p>- These submittals are critical as no site work can be carried out without them. The contractor was late to make the submittals and therefore the project got delayed.</p> <p>- Bad planning and project control. That is it!</p> <p>- Yes. There was an issue with being late to make the submittals</p> <p>- These paper works are affecting projects unnecessary. If there is a way to reduce these requirements and to be submitted along the project, it could have helped moving the project faster</p>	<ul style="list-style-type: none"> <li>• Delay in submittals</li> <li>• process is lengthy and complicated</li> <li>• Project delay</li> <li>• Submittals are critical</li> </ul>	<p><b>Progress Meeting 3:</b> "Point of Concern: ADSS expressed concern over the apparent limited progress shown to date in respect of submittals that are necessary in advance of site works proceeding</p>

	advance of site works proceeding)			
	How this delay in the appointment of Project Manager contributed to the project outcome and to the overall delay?	<ul style="list-style-type: none"> <li>- There were late in providing alternative PM for the project. They have proposed a PM that was approved but did not join. PM is a key position in the project and for sure it effected the project outcome</li> <li>- I can say the project completion time as for the quality, it would have not been accepted if it did not reach the quality specified.</li> <li>- It affected it very much as the project manager is the leader of the project and if not available it will be negative.</li> <li>- I was not there at that time. I agree that project manager plays an important role in any project.</li> </ul>	<ul style="list-style-type: none"> <li>• Delay in PM replacement</li> <li>• Delay in action</li> <li>• Quality effect time</li> <li>• unjust risk allocation</li> <li>• No procurement approaches to promote motivation</li> </ul>	<b>Progress meeting 9:</b> regarding the delay in the appointment of Project Manager, DC informed that they have sent the reminder to LWD on 18/10/10. ADSSC reiterated that this issue is still outstanding and the delay in finalizing this key personnel is contributing to the overall delay as reflected in the actual progress. LWD explained the problem encountered and the unavailability of the candidate who was already approved by ADSSC. LWD confirmed that alternative options (two choices) are under consideration and will be submitted officially within two days.
	How the planning ability had an influence on project success?	<ul style="list-style-type: none"> <li>- If submittals are not completed and no personnel to carry out the site activities, there will be no progress and the project completion date will not be met which is obvious in this project. It is just bad planning</li> <li>- The contractor had issues with appointing people to the project at that stage which effected the progress of work</li> <li>- In general, it is not easy to find people on time and not easy to maintain them at the company. Things happen in the project which is beyond your control.</li> <li>- It is just bad planning and no good control over the subcon.</li> <li>- They were not able to follow the plan and they did not do risk planning</li> <li>- The subcontractor was not following the schedule we gave them which in turn affected our performance unfortunately.</li> </ul>	<ul style="list-style-type: none"> <li>• Delay in submittals</li> <li>• Not following the plan</li> <li>• Weak control</li> <li>• Weak resource Planning</li> <li>• Weak risk planning</li> <li>• learning ability is perceived to be weak</li> <li>• innovation and creative solutions are perceived to be weak</li> <li>• Explicit knowledge</li> <li>• Tacit knowledge</li> <li>• Embedded knowledge</li> <li>• information, skills, and expertise</li> <li>• knowledge management systems</li> <li>• knowledge is valuable</li> </ul>	<b>Progress meeting 9:</b> ADSSC expressed concern about the slow progress shown to date in respect of site activities, submittals, appointment of key personnel etc. Progress 15: After verifying the planned Vs actual progress, ADSSC/DC expressed their concern regarding the delay in achieving the required progress and stated that delay percentages is reaching to critical levels. After the detailed review of the two weeks look ahead schedule and progress summary. DC highlighted that the major delay is in NDM works and construction of manholes. LWD replayed that most of the subcon are not mobilized to site including M/S Hurtec and M/S AQI Manbaa casting of manholes is also commenced and will reduce the delay and catch up with the required progress soon.
	How the influence of this issue and communication to the	<ul style="list-style-type: none"> <li>- That was due to lack of coordination between them and they lost time as other activities were depending on the completion of this one.</li> <li>- lack of communication which made them loose time unnecessary</li> </ul>	<ul style="list-style-type: none"> <li>• Misunderstanding</li> <li>• communication is</li> </ul>	<b>Progress meeting 17:</b> Point of Concern: DC expressed their dissatisfaction in lack of providing accurate and reliable information

	project outcome?	- That was misunderstood which can easily happen in any project. It took time of course but we were able to compensate the time lost.	perceived to be weak	about the length of FOC interfacing with LWD's scope of work. LWD stated that the as built information provided but IGCS has been changed and agreed to provide the required for further necessary action with ADSSC
Organization Capital  Research Question 2	How close coordination helped in public complains?	<ul style="list-style-type: none"> <li>- It helped to minimize public complains.</li> <li>- We started to receive less complains.</li> <li>- With closer coordination we were able to minimize public complains.</li> </ul>	<ul style="list-style-type: none"> <li>• Public inconvenience and compliance</li> <li>• Weak Communication</li> <li>• Better coordination</li> <li>• planning intention</li> <li>• exchange knowledge</li> </ul>	<b>Progress Meeting 43:</b> LWD to ensure close coordination on site with public for their site operations in order to minimize disturbance and public nuisance.
	How problem solving ability had an influence on project success?	<ul style="list-style-type: none"> <li>- Not good problem solving skill. It took them time to come up with effective alternative options.</li> <li>- Their problem solving skill was weak as they were not motivated.</li> <li>- We managed to solve the problem and deployed more resources.</li> </ul>	<ul style="list-style-type: none"> <li>• Problem solving ability is perceived to be weak</li> <li>• performance-based incentive mechanism unavailable</li> <li>• above business-as-usual not achieved</li> <li>• Team is perceived not motivated</li> <li>• Problem solving ability is perceived to be weak</li> <li>• implementation mind-set</li> </ul>	<b>Progress Meeting 43:</b> DC asked LWD to explore alternative options to complete remaining cleaning and inspection survey in blue sectors (E40, E42 and W59/02) as per the existing condition of the sewer network.
	Why there was a penalty on the contractor?	<ul style="list-style-type: none"> <li>- If you are late, the project cost on the contractor increases as well as deduction is made. Time definitely affects the project cost.</li> <li>- A deduction was made on the contractor from their final payment due to the delay</li> <li>- It was beyond our control. The delay of the project was mainly because of permits and approval as we lost so many days.</li> </ul>	<ul style="list-style-type: none"> <li>• Penalty</li> <li>• Time influenced cost</li> <li>• Inconsistency between the project performance goals and incentive goals</li> <li>• Unfair and inflexible incentive</li> <li>• performance measurement</li> </ul>	Meeting 47: DC notified LWD regarding the penalty to be applied, in the future payments as the revised contract completion period is already elapsed. LWD stated that they have achieved substantial completion at the end of the approved extension of time as per the earlier meeting with the ADSS and the current ongoing activities are justified in their letter dated 12 July 2012.

			<p>processes</p> <ul style="list-style-type: none"> <li>• Inadequate price negotiation</li> <li>• No performance-enhancing initiatives</li> </ul>	
	How is influence of the internal control factor on the overall progress of the project?	<p>- This control has improved the HSE in the sites and somehow improved the progress rate.</p> <p>- This action would have been good if they implemented it from the start and we could have avoided many public complains.</p> <p>- We managed to put things in control when we implemented this.</p>	<ul style="list-style-type: none"> <li>• Improved control</li> <li>• Delay in action</li> <li>• public inconvenience and compliance</li> <li>• implementation of innovative ideas is perceived to be strong</li> </ul>	<p>Meeting 43: LWD confirmed that the required corrective actions are in progress on site as per the observations/comments received from DC officially on 12/8/12 for EHS audit carried out earlier. LWD requested to carry out a joint inspection on 23/8/12 for the verification of the corrective actions implemented. LWD stated that stricture warnings are issued to the concurrent supervisors related to each violation and committed that further serious actions including termination ill be taken for any reoccurrence.</p> <ul style="list-style-type: none"> <li>• DC again highlighted to maintain good standards of housekeeping around all working areas to avoid complaints from residents. Current status still needs improvement and daily monitoring.</li> <li>• LWD to ensure that there is no lack of attendance from their Site Supervisory staff for all ongoing site activities.</li> </ul>
	How the letter of support provided by ADSSC was supportive to project progress?	<p>- We as a governmental company usually provide such letters upon request to our contractors in order to get support from other governmental authorities so they get priorities and support in case of issues. I can say that there is of course an influence of this letter on the relationship between them and to the project but it is not measurable.</p> <p>- When a letter from a governmental company is given, it should help the contractor build their relationship with authorities which will help the project.</p> <p>- Actually, the process and procedure are complicated and lengthy. Such letters of course can add something but the procedure and regulations are really affecting any project.</p>	<ul style="list-style-type: none"> <li>• process is lengthy and complicated</li> <li>• Project delay</li> <li>• Letter of support</li> </ul>	<p>Meeting no. 3" ADSSC and DC stated that they will issue the letter of assistance to LWD shortly</p>
Relation Capital Research Question 3	How the relationship with Abu Dhabi Municipality influenced the overall	<p>- Despite working for a governmental project and the letter of assistance they got, there were not able to build a good relation with authorities to gain support when issues come up. These permits and approval certainly delayed the project.</p> <p>- They used to have an issue every time they need to get approval. This issue</p>	<ul style="list-style-type: none"> <li>• Letter of assistance</li> <li>• Not building relationship</li> </ul>	<p>Progress meeting 17: Point of concern: LWD stated their concern regarding time required for obtaining permits/approvals from different authorities. ADSSC/DC reminded LWD that is</p>

	outcome of the project?	affected the project.	<ul style="list-style-type: none"> <li>• Project time over-run</li> <li>• Relationship is perceived to be weak</li> <li>• Interactional justice and reciprocity</li> </ul>	their responsibility to obtain permits/approvals as per the requirement of the contract
Social Capital Research Question 4	How the connection between team members influenced the overall outcome of the project?	<p>- He lacks the communication and relationship skills which I believe affected his outcome as an HSE manager. They were not able to meeting the HSE standard resulting to public inconvenience and compliance.</p> <p>- HSE manager and the team were weak and made an effect on the HSE.</p> <p>- I think there was a misunderstanding during the meeting.</p>	<ul style="list-style-type: none"> <li>• Dissatisfaction</li> <li>• Know-How</li> <li>• Misbehavior</li> <li>• rational behaviour and cooperation are perceived to be weak</li> <li>• public inconvenience and compliance</li> <li>• Weak Communication</li> <li>• Knowledge sharing</li> <li>• Team members connection is perceived to be weak</li> <li>• team tend to resist sharing their knowledge</li> <li>• team environment is perceived to be weak</li> </ul>	<p>Meeting 42: ADSSC/DC expressed total dissatisfaction regarding the misbehavior of LWD's HSE manager during the meeting. DC will issue official letter in this regard.</p> <ul style="list-style-type: none"> <li>• The delay and poor quality in reinstatement works is resulting to public inconvenience and compliance.</li> <li>• DC pointed out the recent increase in quality and EHS issues in the project and asked LWD for the rectification and to avoid reoccurrence.</li> <li>• LWD highlighted regarding the new permit regulation of dewatering discharge. DC reminded LWD that this is still their contractual obligation to comply with the new regulations.</li> </ul>



## Case 10: Summary of Interviews Transcripts of Case 10 (Project O-1692)

Category/RQ	Interview Question	Interview transcript [Client PM - Black, Consultant PM - Blue, Contractor PM - Green]	Initial coding framework	Supporting Evidence
Human Capital  Research Question 1	How the experience had an influence on project success?	<p>- Team assigned was good. The members of the team were skillful with the right experience and the qa/qc engineer and the PM were all ok. They helped moving the project. However, towards the en of the project, PM and QA/QC engineer were not available which effected the project completion and caused expectable delay at there are other factor that made the project time to be shifted such as VO for additional work and some factors beyond their control and our control.”</p> <p>- Members were ok. It is just that some left during the project that affected it negatively.</p> <p>- The team was competent.</p>	<ul style="list-style-type: none"> <li>Team Experience was good</li> <li>Individual Experience</li> <li>Project manager is good</li> <li>Team is competent</li> <li>Team resignation</li> <li>Weak management support</li> <li>Inadequate price negotiation</li> </ul>	<b>Progress Meeting 1:</b> Contractor submitted his organization chart. PM, safety officer and QC/QA Engineer have been interviewed and found acceptable.
	How Planning capability had an influence on project success?	<p>- This was a good planning from their side.</p> <p>- Good risk planning and problem solving.</p> <p>- It is all about planning. If you have good plan you will be able to solve issues.</p>	<ul style="list-style-type: none"> <li>Good Planning</li> <li>Good problem solving</li> <li>project success</li> </ul>	<b>Progress Meeting 30:</b> ADMAC advised that they expected the permanent power supply to be available for PS by mid of December 2011; they added that in case of any delay for the power for reasons beyond their hand. Testing and commissioning for the station will be carried out by temporary power supply.
	How the project leadership influenced the overall outcome of the project?	<p>- The PM was actually good and helped the project a lot but he left the project before it was completed. This somehow delayed the project.</p> <p>- The PM who started the project was good but unfortunately he left the project before it got completed.</p>	<ul style="list-style-type: none"> <li>Strong project leadership</li> <li>Project time over-run</li> <li>Project manager unavailable</li> </ul>	<b>Progress Meeting 4:</b> Project Manager Approval on 16/06/2010.
	How the influence of this issue of progress meeting 19 on the overall delay?	<p>- It affected the project of course as no immediate replacement was made.</p> <p>- It got the project to be delayed. They could not find replacement and they paid penalty for that.</p> <p>- Yes. I agree. We paid penalty plus the delay on work.</p>	<ul style="list-style-type: none"> <li>Staff replacement</li> <li>Penalty</li> <li>Unfair and inflexible incentive performance measurement</li> </ul>	<b>Progress Meeting 19:</b> Although the actual progress of the contract was slightly improved during December 2010. It is still far from the required rate of progress necessary to meet the contract completion date. It is noted through our progress follow – up record that the latest progress figures show a mere 1.5

			<p>processes</p> <ul style="list-style-type: none"> <li>Inconsistency between the project performance goals and incentive goals</li> <li>Problem solving ability is perceived to be weak</li> <li>Late contractor involvement</li> </ul>	<p>(average) per week. By continuing with this rate of progress, it would take another one year to complete this project. Part of the reasons behind the noted poor progress is non-availability of the PM since 2 months and also the non-availability of QA/QC Engineer along with the stoppage of NDM works since more than 3 weeks. Progress is still unacceptable. More improvement is required. Hyder's letter ref. 1113 dated 3/2/2011, concerning this subject has been issued to the department, and also Hyder's letter ref. 1108 dated 3/2/2011, concerning the same subject has been issued to the contractor.</p>
	How the influence of this issue QA/QC engineer unavailability to the project outcome?	<p>- This helped initially and later it affected the project as the PM and the QA/QC left the project.</p> <p>- There were late in finding a suitable candidate which affected the project.</p> <p>- Finding replacement is not a simple job as they have to be approved by us first, by management, by consultant and by client. So there are so many approvals they have to go for before they are finally appointed. I agree that this delay caused some delay on the project.</p>	<ul style="list-style-type: none"> <li>Team resignation</li> <li>Inequitable risk profile</li> <li>Suitable candidate</li> <li>Staff replacement</li> <li>No procurement approaches to promote motivation</li> </ul>	<p><b>Progress Meeting 5:</b></p> <p>-The proposed QC / QA Engineer not available, ADMAC to submit formally another proposal.</p> <p>-When queried by ADSSC, ADMAC advised that their Head of QA/QC was covering until individual appointed – ADSSC requested ADMAC to confirm in writing.</p> <p>-ADMAC requested temporary approval of their proposed and rejected QA/ QA Engineer, working under Dr. Wissam, until a permanent QA /QC Engineer is approved.</p>
	How the communication factor had an influence on project success?	<p>- Communication in this project was good in fact otherwise the project may get affected more.</p> <p>- I was happy with the level of communication during the project</p> <p>- We did not have any major miscommunication in this project. It was up to the level required and it helped the project of course.</p>	<ul style="list-style-type: none"> <li>Good communication</li> <li>Good Coordination</li> </ul>	<p><b>Progress Meeting 5:</b> ADSSC raised objection to the inclusion of the twin 400 mm dia irrigation lines under item 2, referring to the pumping station location, as this was not discussed in the meeting no.4 nor included in the draft that was circulated for comment. ADMAC stated that they had mentioned these lines in Meeting 4. All parties agreed that discussion had only been about the existing services along the proposed gravity pipeline. It was accepted that the issue at the pumping station had not been recognized at Meeting 4.</p>
		<p>- This issue could have made a big impact on the project but luckily it was solved quickly.</p> <p>- The contractor was good in solving this issue</p> <p>- It is always good to have a pack up plan. I would say that this was a good planning and problem solving.</p>	<ul style="list-style-type: none"> <li>Good Planning</li> <li>Good problem solving</li> </ul>	<p><b>Progress Meeting 6:</b> The progress of Ground investigation works is slow, due to the breakdown of the rigs. ADMAC advised that the 3 rigs are in operation the date of this meeting. Records of rigs operation are available.</p>

Organization Capital  Research Question 2	How motivation had an influence on project success?	<ul style="list-style-type: none"> <li>- Team did not seem to be motivated. Maybe at the start but later they lost the momentum. I believe this also contributed to the delay.</li> <li>- lack of motivation towards the mid of the project was obvious as they progress rate was slow</li> <li>- Well. Motivation is important of course and due to the unavailability of PM they team may got demotivated as they needed a leader to keep on motivating them.</li> </ul>	<ul style="list-style-type: none"> <li>• Low project team efficacy and potency</li> <li>• Motivation misalignment</li> <li>• performance-based incentive mechanism unavailable</li> <li>• Team is perceived not motivated</li> <li>• team efficacy/potency is perceived to be weak</li> <li>• above business-as-usual not achieved</li> <li>• No performance-enhancing initiatives</li> <li>• management support is perceived to be weak</li> </ul>	<p><b>Progress Meeting 20:</b> ADSSC expressed concern over the Contractor poor progress of works and instructed them to manage the resources and adopt every effort to recover the delay.</p> <p><b>Progress Meeting 22:</b> ADMAC still to submit replacement for PM – deduction incorporated in interim payments. The progress still far from the required rate of progress necessary to achieve completion of the works within the shortest possible period. The average progress figures show 2% per week. This is unacceptable especially in this stage of the contract period. More improvement is required from the contractor. Hyder's letter ref. 1113 dated 3/2/2011, concerning this subject has been issued to ADSSC, and also Hyder's letter ref. 1108 dated 3/2/2011, concerning the same subject has been issued to the contractor. Despite ADMAC confirmed last meeting that the scope of works will be completed on August, it looks that the work will not completed before end of year 2011.</p>
	How the effect of keeping such a statement in almost all progress meeting reports?	<ul style="list-style-type: none"> <li>- This is important to control and put the project on track.</li> <li>- This project was an important project to the client so we wanted to highlight this in almost all progress meetings.</li> <li>- Due to the sensitivity of the project, we put a very strong control system.</li> <li>- The progress kept on improving through good monitoring and control.</li> <li>- Tighter control.</li> <li>- We managed to put the project back on track through intensive and tight control.</li> </ul>	<ul style="list-style-type: none"> <li>• Good Internal Control</li> <li>• Goal commitment</li> </ul>	<p><b>Progress Meeting 2:</b> ADSSC and Hyder have advised the contractor that due to the sensitivity and great importance of this project a special consideration should be given to achieve the programmed targets all the time.</p>
	How Management Support, good planning and control had an influence on project success?	<ul style="list-style-type: none"> <li>- Management support, good planning and good internal control.</li> <li>- I agree with that [management support].</li> <li>- That is true as the three factors are very important.</li> </ul>	<ul style="list-style-type: none"> <li>• Good Planning</li> <li>• Management support</li> <li>• Good Internal Control</li> </ul>	<p><b>Progress Meeting 16:</b> There is a good attempt noticed this week on the way to achieve better progress and reduce the expected delay. But the progress is still unacceptable. More improvement is required</p> <p><b>Progress Meeting 17:</b> There is another good attempt noted this week on the way to achieve better progress and reduce the expected delay. But this attempt is less than the previous one that was achieved last week, the progress is still unacceptable. More improvement is required.</p>

<p>Relation Capital</p> <p>Research Question 3</p>	<p>How the relationship with entities directly associated with the project influenced the overall outcome of the project?</p>	<p>- They know the procedures plus got some personal contacts there that made things for them not too complicated.</p> <p>- They did not have problem with that and this was important part as this project was coordination and third party intensive project.</p> <p>- We have good relationship with all departments and we know all steps involved.</p> <p>- Good relationship and personal contact as this is not the same case with others.</p> <p>- They must have good relationship with ADSSC.</p> <p>- We good support from other entities as we have done many previous work with them before.</p>	<ul style="list-style-type: none"> <li>• Good relationship</li> <li>• Know-How</li> <li>• Strong Team</li> <li>• Interactional justice and reciprocity</li> </ul>	<p><b>Progress Meeting 2:</b> Proposed pipeline conditional route approval has been granted. Hyder confirmed that all the proposal route approval has been granted by Town Planning Department (TPD) and added that they already provided ADMAC with TPD's approval letter.</p> <p><b>Progress Meeting 6:</b> ADMAC advised that they got the NOC from ADDC on 10/07/2010. ADSSC inquired about how they got the NOC without submitting the required Method Statement covering asset protection to ADDC, and requested that the Method to be submitted before the coming Wednesday 21/07/2010. ADMAC confirmed that ADDC requested a copy of the approved shop drawing only.</p>
<p>Social Capital</p> <p>Research Question 4</p>	<p>How connection between team members had an influence on project success?</p>	<p>- Connection was very good and no major issue that affected the project.</p> <p>- No problem with connection</p> <p>- Connection between each other must be good to make the project healthy.</p>	<ul style="list-style-type: none"> <li>• Good team member connection</li> <li>• Knowledge sharing</li> <li>• project team efficacy and potency</li> </ul>	<p><b>Progress Meeting 35:</b> ADSSC requested ADMAC to express their coordination with the entire concerned supplier for MandE equipment in order to finish the visual inspection on 31/1/2012.</p>